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SERIES M: TMN AND NETWORK MAINTENANCE: INTERNATIONAL TRANSMISSION SYSTEMS, TELEPHONE CIRCUITS, TELEGRAPHY, FACSIMILE AND LEASED CIRCUITS

Telecommunications management network

Information model for management of leased circuit and reconfigurable services

ITU-T Recommendation M.3108.1

(Previously CCITT Recommendation)

ITU-T M-SERIES RECOMMENDATIONS

TMN AND NETWORK MAINTENANCE: INTERNATIONAL TRANSMISSION SYSTEMS, TELEPHONE CIRCUITS, TELEGRAPHY, FACSIMILE AND LEASED CIRCUITS

Introduction and general principles of maintenance and maintenance organization	M.10–M.299
International transmission systems	M.300–M.559
International telephone circuits	M.560–M.759
Common channel signalling systems	M.760–M.799
International telegraph systems and phototelegraph transmission	M.800–M.899
International leased group and supergroup links	M.900–M.999
International leased circuits	M.1000–M.1099
Mobile telecommunication systems and services	M.1100–M.1199
International public telephone network	M.1200–M.1299
International data transmission systems	M.1300–M.1399
Designations and information exchange	M.1400–M.1999
International transport network	M.2000–M.2999
Telecommunications management network	**M.3000–M.3599**
Integrated services digital networks	M.3600–M.3999
Common channel signalling systems	M.4000–M.4999

For further details, please refer to ITU-T List of Recommendations.

ITU-T RECOMMENDATION M.3108.1

INFORMATION MODEL FOR MANAGEMENT OF LEASED CIRCUIT AND RECONFIGURABLE SERVICES

Summary

This Recommendation provides a GDMO-based information model to support the management of the leased circuit service as outlined in Recommendation M.3208.1. Appendix I provides a protocol-independent version of this information model in "structured" English. Appendix II provides a mapping from the management functions in Recommendation M.3208.1 to the Managed Objects defined in this Recommendation. Appendix III provides a Unified Modelling Language (UML) view of the same information model.

Source

ITU-T Recommendation M.3108.1 was prepared by ITU-T Study Group 4 (1997-2000) and was approved under the WTSC Resolution No. 1 procedure on the 26th of March 1999.

FOREWORD

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In some areas of information technology which fall within ITU-T's purview, the necessary standards are prepared on a collaborative basis with ISO and IEC.

NOTE

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As of the date of approval of this Recommendation, the ITU had not received notice of intellectual property, protected by patents, which may be required to implement this Recommendation. However, implementors are cautioned that this may not represent the latest information and are therefore strongly urged to consult the TSB patent database.

CONTENTS

Recommendation M.3108.1

INFORMATION MODEL FOR MANAGEMENT OF LEASED CIRCUIT AND RECONFIGURABLE SERVICES

(Geneva, 1999)

1 Scope, purpose and application

1.1 Scope

This Recommendation provides a GDMO-based information model to support the management of the leased circuit service as outlined in Recommendation M.3208.1. Appendix I provides a protocol-independent version of this information model in "structured" English. Appendix II provides a mapping from the management functions in Recommendation M.3208.1 to the managed objects defined in this Recommendation. Appendix III provides a Unified Modelling Language (UML) view of the same information model.

1.2 Purpose

The purpose of this Recommendation is to support standard interfaces, across the X interface, among service customers, service providers and network providers for the purposes of managing leased circuit services in the service management layer of the TMN. It specifically intended to support the requirements provided in Recommendation M.3208.1.

1.3 Application

This Recommendation is applicable to interfaces between systems that participate in the ordering and management of leased circuit services.

2 References

The following ITU-T Recommendations and other references contain provisions which, through reference in this text, constitute provisions of this Recommendation. At the time of publication, the editions indicated were valid. All Recommendations and other references are subject to revision; all users of this Recommendation are therefore encouraged to investigate the possibility of applying the most recent edition of the Recommendations and other references listed below. A list of the currently valid ITU-T Recommendations is regularly published.

– ITU-T Recommendation G.805 (1995), *Generic functional architecture of transport networks*.

– ITU-T Recommendation M.3010 (1996), *Principles for a telecommunications management network*.

– ITU-T Recommendation M.3100 (1995), *Generic network information model*.

– ITU-T Recommendation M.3200 (1997), *TMN management services and telecommunications managed areas: Overview*.

– ITU-T Recommendation M.3208.1 (1997), *TMN management services for dedicated and reconfigurable circuits network: Leased circuit services*.

– ITU-T Recommendation M.3400 (1997), *TMN management functions*.

– ITU-T Recommendation Q.821 (1993), *Stage 2 and stage 3 description for the Q3 interface – Alarm surveillance*.

– CCITT Recommendation X.721 (1992) | ISO/IEC 10165-2:1992, *Information technology – Open Systems Interconnection – Structure of management information: Definition of management information*.

– CCITT Recommendation X.734 (1992) | ISO/IEC 10164-5:1993, *Information technology – Open Systems Interconnection – Systems management: Event report management function*.

– CCITT Recommendation X.735 (1992) | ISO/IEC 10164-6:1993, *Information technology – Open Systems Interconnection – Systems management: Log control function*.

– ITU-T Recommendation X.746 (1995) | ISO/IEC 10164-15:1995, *Information technology – Open Systems Interconnection – Systems management: Scheduling function*.

– ITU-T Recommendation X.790 (1995), *Trouble management function for ITU-T applications*.

3 Definitions

This Recommendation uses the definitions provided in Recommendation M.3208.1.

4 Abbreviations

This Recommendation uses the following abbreviations:

AP	Access Point
ATM	Asynchronous Transfer Mode
CP	Connection Point
CPE	Customer Premises Equipment
GDMS	Guidelines for the Definition of TMN Management Services
LC	Link Connection
LCS	Leased Circuit Service
MS	Management Services
NML	Network level Management Layer
PDH	Plesiochronous Digital Hierarchy
SAD	Service Access Domain
SAG	Service Access Group
SC	Service Customer
SDH	Synchronous Digital Hierarchy
SML	Service level Management Layer
SN	Service Node
SNC	Sub-Network Connection
SP	Service Provider
TCP	Termination Connection Point

TMN Telecommunications Management Network

UML Unified Modelling Language

5 Overview

This clause provides an overview of the information model and its use in the management of LCS. Clause 6 provides the formal definition of the GDMO-based information model.

The information model consists of five fragments:

- Generic service request – contains generic MOs to be used for subclassing MOs in support of specific services.
- LCS service request – supports the service request process for LCS.
- Link connection service request – supports the service request process for link connection service.
- Transport service – represents transport services, supports SC's management of provisioned services.
- Resources – represents resources used for the provisioning of LCS and link connection service.

The first four are defined in this Recommendation. The fifth also includes information elements defined in other Recommendations, such as Recommendations M.3100 and G.855.1.

The management of a LCS or a link connection service starts when a Service Customer (SC) requests the service. This can be achieved by the SC creating an instance of a subclass of transportService MO, or the SC creates an instance of a subclass of currentServiceRequest MO. More specifically, the created object is an instance of one of the following MO classes:

- lcs;
- linkConnectionService;
- currentLcsRequest;
- currentLinkConnectionService.

The first two bullets above correspond to instant service provisioning, without going through the service request process. The last two bullets above correspond to the case where the SC's request goes through the service request process.

The request must satisfy the terms of the Service Level Agreement (SLA) between the SC and the SP.

The following scenario applies when the request proceeds through the service request process. The Service Provider (SP), assuming the Agent role, creates an instance of a (subclass of) currentServiceRequest MO. Upon creation of this MO instance the SP fills in the values of some of the attributes, as specified in Recommendation M.3208.1 (e.g. the actual due date for the service). The SP then sends a create reply regarding that creation to the SC, assuming the Manager role. The create reply includes the values of the attributes that must be communicated by the SP to the SC in response to the service request, as per Recommendation M.3208.1. If the SC has created an instance of a (subclass of) currentServiceRequest MO, then the SC can update the request through the updateServiceRequest action, e.g. the SC may request a change to the date when the service is desired, or a different route. The SC may also cancel the initial request by deleting the currentServiceRequest. The (subclasses of) currentServiceRequest represent the current view of the service request. In order to keep track of the modifications issued by the SC, the SP may create (subject to SLA) instances of (a subclass of) serviceRequestHistoryRecord that represent the values

of the attributes requested to be modified by specific updateServiceRequest action. The first instance of serviceRequestHistoryRecord created for a specific service request represents the values of the attributes of the initial service request. The values of the currentServiceRequest may be different from the values requested by the SC due to changes made by the SP (and reported to the SC).

After the requested LCS or link connection service has been implemented by the SP, the SP instantiates an instance of the lcs or linkConnectionService MO. Both are subclasses of the transportService MO. More specifically, the SP creates an instance of one of the following MO classes:

- linkConnectionService;
- lcs.

The SP then informs the SC of the availability of the requested service through a notification of the creation of an instance of a MO representing that service.

In some cases the SP may provide the requested service instantaneously, even though formally it goes through the service request process. In this case the SP will send the SC three consecutive notifications: for the creation of a service create request record, for the deletion of the just created service create request record, and for the creation of the requested service. In this case the service create request record is purely transient and the SC does not interact with it. This scenario applies when the SC initiates the request through the service request process. If the SP represents to provide requested LCS or link connection service instantaneously, then another scenario is also possible: the SC skips the service request process and requests the service by issuing a "create an instance of" (a subclass of) transportService.

After the SC has been notified about the creation of that MO (a subclass of transportService), the SC can modify the service through management operations for some attributes. For other attributes the modification is done by creating an instance of the modifyRequestRecord MO class, referring to the lcs or linkConnectionService MO instance. The SP may choose to require that an instance of serviceModifyRequest MO be created every time the SC wishes to make changes to any attributes of the service.

An instance of a (subclass of) transportService MO class may refer to instances of serviceAccessEquipmentView MO classes (representing CPE) and/or instances of MO classes corresponding to topological elements such as link, connection point and subnetwork.

An instance of the networkR1 MO is used for naming. All entries in that MO instance can be changed only by the SP, though the SC can read (GET) such information.

An instance of the account MO class (imported from Recommendation X.790) contains information regarding the SC, such as the SC's contact information. In general, only the SC can set information in the account MO. The account MO is contained in the network MO (imported from Recommendation M.3100).

The SC can create an instance of a serviceAccessDomain MO class. A serviceAccessDomain contains zero or more serviceAccessGroups, though a serviceAccessDomain containing less than two serviceAccessGroups is not very useful. The SC can create instances of serviceAccessGroup MO class. A serviceAccessGroup MO contains zero or more SAPs. A serviceAccessGroup is created without any SAPs. After creation of a serviceAccessGroup, the SC can add or remove SAPs from the serviceAccessGroup. The SC can identify some or all of the SAPs desired in a serviceAccessGroup. If the SC adds to a serviceAccessGroup more SAPs than are explicitly identified, then the SP assigns additional SAPs, from the same service location to the serviceAccessGroup, and informs the SC about the identity of those SAPs. The SC can add or remove SAPs from a serviceAccessGroup through management operations. If the two SAPs corresponding to a LCS belong to

serviceAccessGroups that are members of the same serviceAccessDomain, then the LCS is a reconfigurable LCS. This is usually also reflected in the service name and service type of the LCS.

5.1 Generic service request fragment

The (generic) service request MOs are not instantiable. They are used as superclasses for service-specific, instantiable MOs. As such the generic MOs can be reused to define instantiable MOs for other services. The LCS and link connection service requests instantiable MOs are derived from the generic ones.

The generic service request fragment consists of MOs that support the request of a service as well as updates to service requests and modifications to existing services. It defines three generic, non-instantiable, classes:

- currentServiceRequest;
- serviceRequestHistoryRecord;
- serviceModifyRequest.

The currentServiceRequest represents the up-to-date values of the attributes describing the requested service. Those values may be different from those in the initial service request due to subsequent changes requested by the SC or introduced by the SP. Indeed, the SP may replace the values of some attributes (e.g. if the available bandwidth does not match the bandwidth requested by the SC). The SLA may specify that the service request history is kept through (subclasses of) serviceRequestHistoryRecord. Several instances of serviceRequestHistoryRecord may be created. The first instance of serviceRequestHistoryRecord represents the SC initial request for service. Subsequently created instances represent changes to the request submitted by the SC.

If there is a large number of updates, it may not be clear what the SC really wants. To this end the SP may create an instance of a currentServiceRequest MO class. This is a generic, non-instantiable class that represents the current information about what the SC wants. It is derived from serviceCreateRequestRecord, though the values of its attributes are updated (by the SP) whenever a new serviceUpdateRequestRecord is received. When this happens it sends an attribute value change notification to the SC, thus keeping the SC updated. The SC can inquire about the current information in the request by retrieving values of attributes of the currentServiceRequest.

After the requested service has been created, the SC can modify that service through management operations or by creating instances of (a subclass of) serviceModifyRequest MO class. As in the case of service request, the SC may issue management operations against the MO representing the service instead of creating new instances of serviceModifyRequest. In that case the SP may keep a log of the management operations issued by the SC to update attributes in the MO representing the service. (The mechanism for such storage is outside the scope of this Recommendation.)

Instantiable, service-specific MO classes are derived from the MOs in this fragment.

5.2 LCS service request fragment

The MO classes in this fragment consist of LCS-specific subclasses of the MO classes in the generic service request fragment.

5.3 Link connection service request fragment

The MO classes in this fragment consist of link connection service-specific subclasses of the MO classes in the generic service request fragment.

5.4 Transport service fragment

The transport service fragment contains a generic, non-instantiable MO transportService from which two instantiable MOs are derived: lcs and linkConnectionService.

This fragment further contains two objects representing serviceAccessGroup and serviceAccessDomain. Those instantiable objects allow the SC to manage the existing services through management operations directed at the corresponding objects. This is a plausible alternative to the management of existing services through the creation of serviceModifyRequestRecord MOs.

5.5 Resource fragment

The resource fragment contains two MOs that represent physical resources and which are needed in some aspects of LCS management: network, as defined in Recommendation M.3100, and serviceAccessEquipment, which is defined in this Recommendation. It further includes MOs that would be defined in support of elements in Recommendation G.805 corresponding to topological entities (link, connectionPoint, subNetwork). Those MOs allow the SP to offer the SC a more detailed view of how the service is provisioned.

Figures 5-1 and 5-2 represent the inheritance and containment relationships of the MOs respectively. Inheritance and containment are not shown for all the MOs that are imported from other Recommendations. Figure 5-2 does not show the containment of the M.3100 network MO in directory objects as specified in Recommendation M.3100.

This Recommendation defines six Functional Units (FUs):

- Service order;
- Service modify;
- Leased circuit service;
- Link connection service;
- Reconfigurable circuit service;
- Resource visibility.

These FUs cover the management functions defined in Recommendation M.3208.1. This Recommendation provides a mapping of the M.3208.1 functions into the FUs and specifies the MOs required for each of the FUs.

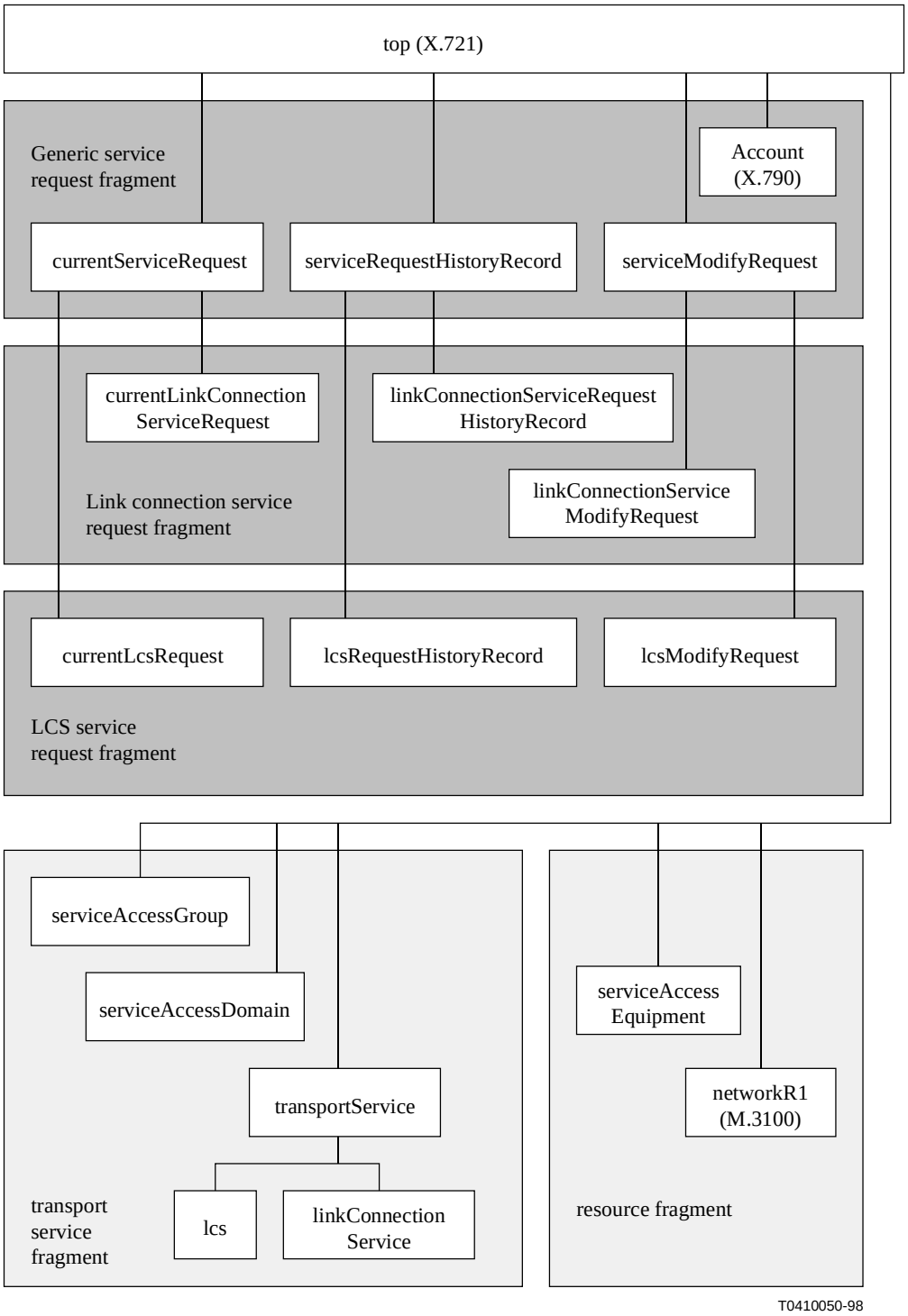


Figure 5-1/M.3108.1 – Inheritance

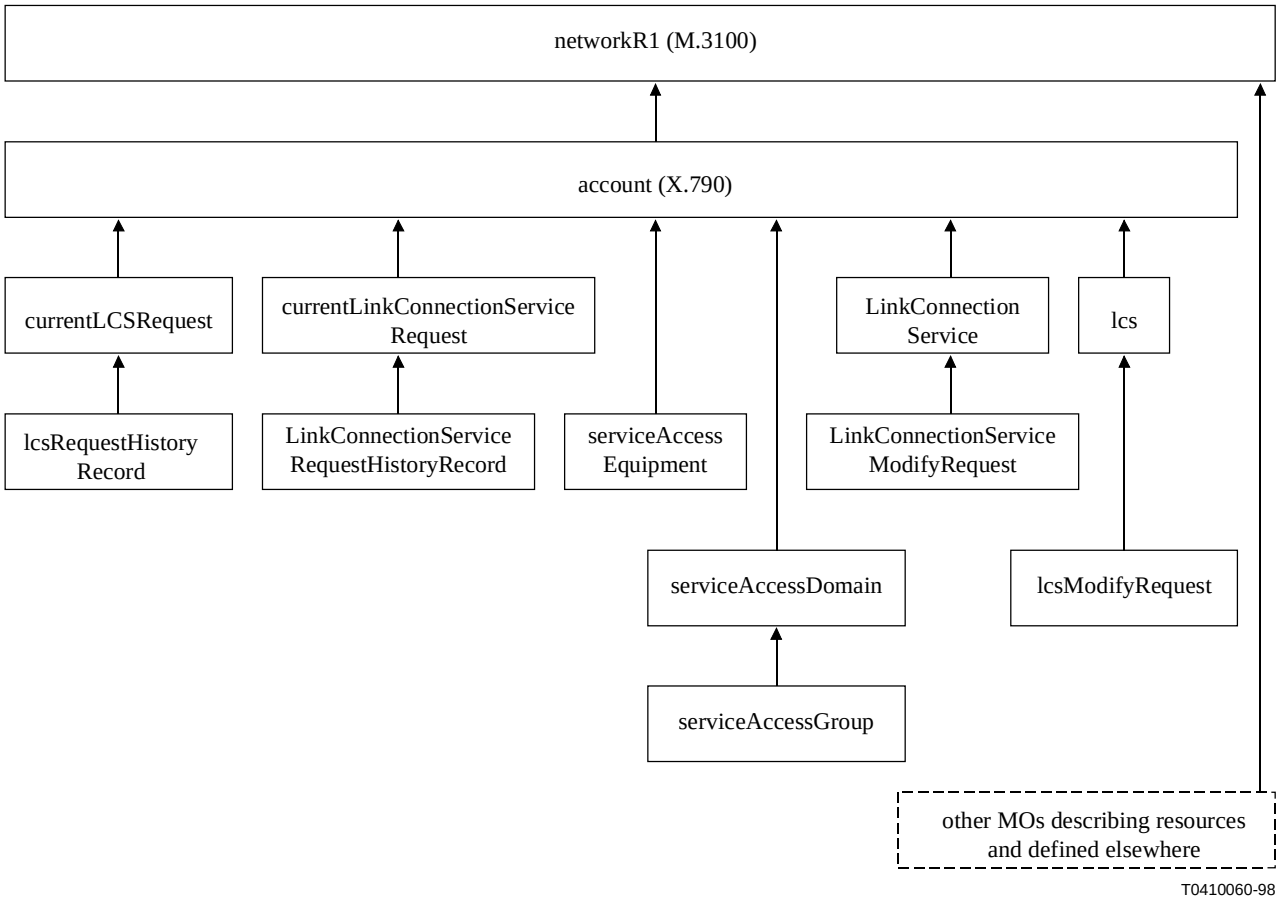


Figure 5-2/M.3108.1 – Containment

6 Information model

This clause provides the information model for the management of LCS using GDMO.

The objects are grouped by fragment.

6.1 Managed objects for generic service request fragment

6.1.1 currentServiceRequest

currentServiceRequest MANAGED OBJECT CLASS
DERIVED FROM "Rec. X.721|ISO/IEC 10165-2:1992":top;
CHARACTERIZED BY
serviceRequestPackage PACKAGE
BEHAVIOUR
currentServiceRequestBehaviour BEHAVIOUR
DEFINED AS
"The currentServiceRequest MO class represents information elements that are common to all service requests and captures the current value of a service request. It is a superclass from which service-specific subclasses can be defined.
This MO represents the current view of the values of the service request that the SP will process on behalf of the SC. They may be different from the values requested by the SC due to the availability or lack thereof of SP's resources.

The updateServiceRequest action can be used by the service customer to modify the service request following creation of this object class (or subclasses). The following attributes specified in this object class can be modified by the updateServiceRequest action:

– serviceCustomer contact;
– serviceAvailabilityDate;
– serviceTerminationDate;
– initialServiceAdministrativeState;
– aliasName;
– intervalsOfDay;
– weekMask.

Subclasses of this object class can specify additional attributes that can be modified by the updateServiceRequest action.

It is the responsibility of the SC to check the values of the attributes in the create notification and attribute value change notification emitted by this MO. If the values of any attributes in the notifications are different from those supplied by the SC, and if they are unacceptable to the SC, then the SC may cancel the service request by deleting this object.

If the history of the requested values is to be kept by the SP, then a serviceRequestHistoryRecord is created when the service customer issues an updateServiceRequest action towards a currentServiceRequest (and subclasses); the serviceRequestHistoryRecord contains a record of the attribute values specified in the request. The SP also creates a serviceRequestHistoryRecord of the initial service request values (when the SC creates the currentServiceRequest).";;

```
        ATTRIBUTES
            providerRequestNumber           GET,     -- used as naming attribute
            requestSequenceNumber           GET,
            requestReceptionTime            GET,
            "Rec. X.790":serviceType        GET SET-BY-CREATE,
            serviceProviderContact          GET,
            serviceCustomerContact          GET SET-BY-CREATE,
            serviceAvailabilityDate         GET SET-BY-CREATE,
            serviceTerminationDate          GET SET-BY-CREATE,
            serviceRequestState             GET;
-- this attribute represents the service request state
-- defined in Rec. M.3208.1 and behaves according to the
-- state model
        ACTIONS
            updateServiceRequest;
        NOTIFICATIONS
            "Rec.X.721 | ISO/IEC 10165-2:1992": attributeValueChange,
            "Rec.X.721 | ISO/IEC 10165-2:1992": objectDeletion;;
    CONDITIONAL PACKAGES
        initialServiceAdministrativeStatePackage    PRESENT IF "SLA supports it",
        serviceDescriptionPackage                   PRESENT IF "SLA supports it",
            -- represents the service class in Rec. M.3208.1
        customerRequestNumberPackage            PRESENT IF "SC provides it",
        aliasNamePackage                            PRESENT IF "SLA supports it",
        "Rec. X.721":availabilityStatus             PRESENT IF "Any scheduling (daily, weekly, external) is
                                                    present",
        dailySchedulingCurrentPackage
            PRESENT IF "both the weekly scheduling current package and external scheduler current packages are not
                present and daily scheduling is supported for the requested service",
        weeklySchedulingCurrentPackage
            PRESENT IF "both the daily scheduling current package and external scheduler current packages are not
                present and weekly scheduling is supported for the requested service",
        externalSchedulerCurrentPackage
            PRESENT IF "both the daily scheduling current package and weekly scheduling current packages are not
                present and external scheduling is supported for the requested service";
REGISTERED AS {m3108Part1ObjectClass 1};
```

6.1.2 serviceRequestHistoryRecord

```
serviceRequestHistoryRecord MANAGED OBJECT CLASS
    DERIVED FROM "Rec. X.721 | ISO/IEC 10165-2:1992":top;
    CHARACTERIZED BY
        serviceRequestHistoryRecordPackage PACKAGE
            BEHAVIOUR
            serviceRequestRecordBehaviour BEHAVIOUR
                DEFINED AS
                "This MO represents a history record of the content of a service (update) request by the SC to a
                service request. The serviceRequestHistoryRecord is created when the service customer issues an
                updateServiceRequest action towards a currentServiceRequest (and subclasses) and contains a record
                of the attribute values specified in the request. The service provider also creates a
                serviceRequestHistoryRecord of the initial service request values (when the SC creates the
                currentServiceRequest).";;
            ATTRIBUTES
                requestSequenceNumber     GET,          -- used as naming attribute
                requestReceptionTime      GET;
            NOTIFICATIONS
                "Rec.X.721 | ISO/IEC 10165-2:1992": objectCreation,
                "Rec.X.721 | ISO/IEC 10165-2:1992": objectDeletion;;;

    CONDITIONAL PACKAGES
        aliasNameInfoPackage                  PRESENT IF "part of the service (update) request",
        dailySchedulingInfoPackage        PRESENT IF "part of the service (update) request",
        externalSchedulerInfoPackage          PRESENT IF "part of the service (update) request",
        initialServiceAdministrativeStateInfoPackage
            PRESENT IF "part of the service (update) request",
        serviceAvailabilityDateInfoPackage    PRESENT IF "part of the service (update) request",
        serviceCustomerContactPackage         PRESENT IF "part of the service (update) request",
        serviceDescriptionInfoPackage         PRESENT IF "part of the service (update) request",
        serviceTypeInfoPackage                PRESENT IF "part of the service (update) request",
        serviceTerminationDateInfoPackage     PRESENT IF "part of the service (update) request",
        weeklySchedulingInfoPackage           PRESENT IF "part of the service (update) request";
REGISTERED AS {m3108Part1ObjectClass 2};
```

6.1.3 serviceModifyRequest

```
serviceModifyRequest MANAGED OBJECT CLASS
    DERIVED FROM "Rec. X.721 | ISO/IEC 10165-2:1992":top;
    CHARACTERIZED BY
        serviceModifyRequestPackage PACKAGE
            BEHAVIOUR
            serviceModifyRequestBehaviour BEHAVIOUR
    DEFINED AS "This MO represents SC's request to modify an existing service. It is a superclass from which service-
specific subclasses are derived. When changes to the service occur as a result of such a modification request, or for any
other reason, the MO representing the affected service (e.g. lcs or link connection service) will issue the appropriate
attribute value change notifications. After all the modifications requested by the SC through this MO have been resolved,
this MO instance will be deleted and a notification of its deletion shall be sent to the SC.";;
    ATTRIBUTES
        providerRequestNumber             GET,      -- used as naming attribute
        serviceRequestState               GET,
        serviceInstance          GET SET-BY-CREATE,
        requestReceptionTime              GET;
    NOTIFICATIONS
        "Rec.X.721 | ISO/IEC 10165-2:1992": objectDeletion,
        "Rec.X.721 | ISO/IEC 10165-2:1992": objectCreation;;;
    CONDITIONAL PACKAGES
        aliasNamePackage
            PRESENT IF "SLA supports it",
```

```
        "Rec. X.721":availabilityStatus          PRESENT IF "Any scheduling (daily, weekly, external) is
                                                 present",
        dailySchedulingCurrentPackage
            PRESENT IF "both the weekly scheduling current package and external scheduler current packages are not
                present and daily scheduling is supported for the requested service",
        externalSchedulerCurrentPackage
            PRESENT IF "both the daily scheduling current package and weekly scheduling current packages are not
                present and external scheduling is supported for the requested service",
        serviceCustomerContactPackage
            PRESENT IF "SLA supports it",
        weeklySchedulingCurrentPackage
            PRESENT IF "both the daily scheduling current package and external scheduler current packages are not
                present and weekly scheduling is supported for the requested service";
REGISTERED AS {m3108Part1ObjectClass 3};
```

6.2 Managed objects for LCS request fragment

6.2.1 currentLcsRequest

```
currentLcsRequest MANAGED OBJECT CLASS
    DERIVED FROM currentServiceRequest;
    CHARACTERIZED BY
        currentLcsRequestPackage PACKAGE
            BEHAVIOUR
            currentLcsRequestBehaviour BEHAVIOUR
            DEFINED AS "This MO represents the LCS the SC currently wants, as per the SC's create service request
                and subsequent updates related to that create service request.";;
            ATTRIBUTES
                originatingLocation          GET SET-BY-CREATE,
                terminatingLocation          GET SET-BY-CREATE;
            ACTIONS
                updateServiceRequest
                    bandwidthUnavailable
                    modifyLCSError
                    resourcesUnavailable;
            NOTIFICATIONS
                lcsRequestProgressProblemReport;;;
                -- used to report problems in progressing the request.
                -- changes in the value of the serviceRequestState are
                -- reported using the attribute value change notification.
    CONDITIONAL PACKAGES
        quantityPackage                  PRESENT IF "SLA supports it",
        bandwidthPackage                 PRESENT IF "SLA supports it",
        diversityPackage                 PRESENT IF "SLA supports it",
        routePackage                     PRESENT IF "SLA supports it",
        originatingLocationCPEPackage    PRESENT IF "SLA supports it",
        terminatingLocationCPEPackage    PRESENT IF "SLA supports it",
        originatingLocationSapPackage    PRESENT IF "SLA supports it",
        terminatingLocationSapPackage    PRESENT IF "SLA supports it";
REGISTERED AS {m3108Part1ObjectClass 4};
```

6.2.2 lcsRequestHistoryRecord

```
lcsRequestHistoryRecord MANAGED OBJECT CLASS
    DERIVED FROM serviceRequestHistoryRecord;
    CHARACTERIZED BY
        lcsRequestHistoryRecordPackage PACKAGE
            BEHAVIOUR
            lcsRequestHistoryRecordBehaviour BEHAVIOUR
```

```
            DEFINED AS "This MO represents a record of the attributes of a create or update request of a
            LCS.";;;;
    CONDITIONAL PACKAGES
        originatingLocationInfoPackage        PRESENT IF "part of the service (update) request",
        terminatingLocationInfoPackage        PRESENT IF "part of the service (update) request",
        quantityInfoPackage                   PRESENT IF "part of the service (update) request",
        bandwidthInfoPackage                  PRESENT IF "part of the service (update) request",
        diversityInfoPackage                  PRESENT IF "part of the service (update) request",
        routeInfoPackage                      PRESENT IF "part of the service (update) request",
        originatingLocationCPEInfoPackage     PRESENT IF "part of the service (update) request",
        terminatingLocationCPEInfoPackage     PRESENT IF "part of the service (update) request",
        originatingLocationSapInfoPackage     PRESENT IF "part of the service (update) request",
        terminatingLocationSapInfoPackage     PRESENT IF "part of the service (update) request";
REGISTERED AS {m3108Part1ObjectClass 5};
```

6.2.3 lcsModifyRequest

```
lcsModifyRequest MANAGED OBJECT CLASS
    DERIVED FROM serviceModifyRequest;
    CHARACTERIZED BY
        lcsModifyRequestPackage PACKAGE
            BEHAVIOUR
            lcsModifyRequestBehaviour BEHAVIOUR
                DEFINED AS "This MO represents a request to modify an existing LCS service or a previuous
                modify against an LCS.";;
            NOTIFICATIONS
                lcsModifyProgressProblemReport;;;
                -- used to report problems in progressing the request.
                -- changes in the value of the serviceRequestState are
                -- reported using the attribute value change notification.
    CONDITIONAL PACKAGES
        bandwidthPackage                      PRESENT IF "SLA supports it",
        diversityPackage                      PRESENT IF "SLA supports it",
        routePackage                          PRESENT IF "SLA supports it",
        originatingLocationCPEPackage         PRESENT IF "SLA supports it",
        terminatingLocationCPEPackage         PRESENT IF "SLA supports it";
REGISTERED AS {m3108Part1ObjectClass 6};
```

6.3 Managed objects for link connection service request fragment

6.3.1 currentLinkConnectionServiceRequest

```
currentLinkConnectionServiceRequest MANAGED OBJECT CLASS
    DERIVED FROM currentServiceRequest;
    CHARACTERIZED BY
        currentLinkConnectionServiceRequestPackage PACKAGE
            BEHAVIOUR
                currentLinkConnectionServiceRequestBehaviour BEHAVIOUR
            DEFINED AS "This instantiable MO represents a SC's request for a link connection service.
                The following attributes specified by this object class (in addition to those inherited from
                currentServiceRequest) can be modified by the service customer using the updateServiceRequest
                action:
                – bandwidth
                – originatingLocationCP
                – terminationLocationCP
                The SC must provide either the Originating or Terminating Location Connection Point or both. If one
                of the points is at the customer premises, that point must be provided by the SC. If one of the points is
                in a network of a service provider other than the one receiving create request, it must be provided by
                the SC.";;
```

```
            ATTRIBUTES
                originatingLocationCP       GET SET-BY-CREATE,
                terminatingLocationCP       GET SET-BY-CREATE;
            ACTIONS
                updateServiceRequest
                    bandwidthUnavailable    -- specific action reply parameter values
                    resourcesUnavailable;
    NOTIFICATIONS
                linkConnectionRequestProgressProblemReport;;;
                -- used to report problems in progressing the request.
                -- changes in the value of the serviceRequestState are
                -- reported using the attribute value change notification.
    CONDITIONAL PACKAGES
        bandwidthPackage                PRESENT IF "SLA supports it";
REGISTERED AS {m3108Part1ObjectClass 7};
```

6.3.2 linkConnectionServiceRequestHistoryRecord

```
linkConnectionServiceRequestHistoryRecord MANAGED OBJECT CLASS
    DERIVED FROM serviceRequestHistoryRecord;
    CHARACTERIZED BY
        linkConnectionServiceRequestHistoryRecordPackage PACKAGE
            BEHAVIOUR
            linkConnectionServiceRequestHistoryRecordBehaviour
            BEHAVIOUR DEFINED AS "This MO represents a request to update either a previously issued request to
                create a link connection service, or a previous update against that link connection service request.";;;;
    CONDITIONAL PACKAGES
        bandwidthInfoPackage                PRESENT IF "part of the service (update) request",
        originatingLocationCPInfoPackage    PRESENT IF "part of the service (update) request",
        terminatingLocationCPInfoPackage    PRESENT IF "part of the service (update) request";
REGISTERED AS {m3108Part1ObjectClass 8};
```

6.3.3 linkConnectionServiceModifyRequest

```
linkConnectionServiceModifyRequest MANAGED OBJECT CLASS
    DERIVED FROM serviceModifyRequest;
    CHARACTERIZED BY
        linkConnectionServiceModifyRequestPackage PACKAGE
            BEHAVIOUR
            linkConnectionServiceModifyRequestBehaviour BEHAVIOUR
            DEFINED AS "This MO represents a request to modify an existing link connection service or a previous
                modify against a link.";;
            NOTIFICATIONS
                linkConnectionModifyProgressProblemReport;;;
    CONDITIONAL PACKAGES
        bandwidthPackage PRESENT IF "SLA supports it";
REGISTERED AS {m3108Part1ObjectClass 9};
```

6.4 Managed objects for service fragment

6.4.1 Transport service

```
transportService MANAGED OBJECT CLASS
    DERIVED FROM "Rec. X.721 | ISO/IEC 10165-2:1992":top;
    CHARACTERIZED BY
        "Rec. M.3100:1995":administrativeOperationalStatesPackage,
        "Rec. M.3100:1995":stateChangeNotificationPackage,
        "Rec. M.3100:1995":createDeleteNotificationsPackage,
        "Rec. M.3100:1995":attributeValueChangeNotificationPackage,
```

```
        transportServicePackage PACKAGE
            BEHAVIOUR
            transportServiceBehaviour BEHAVIOUR
            DEFINED AS "This MO represents a transport service. This MO class cannot be instantiated; service-
                specific subclasses of this class can be instantiated. Values of attributes of subclasses of this MO class
                can be set through management operations or through the creation of an instance of a service-specific
                subclass of the serviceModifyRequest MO class. If an attribute is supported by the SLA, and it can be
                set by the SC, and the SC has not specified its value in the service request, then it shall have its default
                value when this MO is instantiated.";;
            ATTRIBUTES
                "Rec. X.790":serviceID              GET SET-BY-CREATE,
                    -- represents the circuit ID or link connection ID specified in Rec. M.3208.1
                    -- the serviceID is used for naming
                serviceTerminationDate      GET-REPLACE,
                bandwidth                   GET-REPLACE,
                serviceProviderContact      GET,
                    -- the value of this attribute is set at creation by the SP
                    -- this attribute points to an instance of X.790 contact MO
                    -- or it contains X.790 PersonReach information.
                serviceCustomerContact      GET-REPLACE;
                    -- this attribute points to an instance of X.790 contact MO
                    -- or it contains X.790 PersonReach information.
            NOTIFICATIONS
                "Rec. X.721 | ISO/IEC 10165-2": qualityOfServiceAlarm;;;
    CONDITIONAL PACKAGES
        aliasNamePackage            PRESENT IF "SLA supports it",
        serviceDescriptionPackage   PRESENT IF "present in the service request",
            -- represents the service class in Rec. M.3208.1
        "Rec. X.721":availabilityStatus                 PRESENT IF "Any scheduling (daily, weekly, external) is
                                                        present",
        "Rec. X.721 | ISO/IEC 10165-2":dailyScheduling
            PRESENT IF "present in the service request.",
        "Rec. X.721 | ISO/IEC 10165-2":weeklyScheduling
            PRESENT IF " present in the service request ",
        "Rec. X.721 | ISO/IEC 10165-2":externalScheduler
            PRESENT IF " present in the service request ";
    REGISTERED AS {m3108Part1ObjectClass 10};
```

6.4.2 lcs

```
lcs MANAGED OBJECT CLASS
    DERIVED FROM transportService;
    CHARACTERIZED BY
        lcsPackage PACKAGE
            BEHAVIOUR
            lcsBehaviour BEHAVIOUR
                DEFINED AS "This instantiable MO represents a LCS. If the SLA allows the SC to specify the route
                and the SC did not specify the route in the service request, then the route attribute shall be present as
                an empty SEQUENCE. The route cannot be changed through a management operation on this MO.
                The route can be changed by the SC by creating an instance of the lcsModifyRequest MO class.";;
        ATTRIBUTES
            originatingLocationSap      GET SET-BY-CREATE,
                "Rec. X.790":serviceType    GET SET-BY-CREATE,
                    -- represents the service name in Rec. M.3208.1
                "Rec. X.790":serviceLocationList GET SET-BY-CREATE,
                    -- represents the originating and terminating
                    -- locations in Rec. M.3208.1
                serviceAvailabilityDate     GET SET-BY-CREATE,
            terminatingLocationSap          GET SET-BY-CREATE;;;
```

```
    CONDITIONAL PACKAGES
        diversityPackage                    PRESENT IF "present in the service request",
        routePackage                        PRESENT IF "route was present in the service request",
        originatingLocationCPEModifyPackage PRESENT IF "originatingLocationCPE was present in the service
                                            request",
        terminatingLocationCPEModifyPackage PRESENT IF "terminatingLocationCPE was present in the service
                                            request";
REGISTERED AS {m3108Part1ObjectClass 11};
```

6.4.3 linkConnectionService

```
linkConnectionService MANAGED OBJECT CLASS
    DERIVED FROM transportService;
    CHARACTERIZED BY
        linkConnectionServicePackage PACKAGE
            BEHAVIOUR
            linkConnectionServiceBehaviour BEHAVIOUR
                DEFINED AS "This instantiable MO represents a link connection service.";;
        ATTRIBUTES
            originatingLocationCP  GET SET-BY-CREATE,
                "Rec. X.790":serviceType    GET SET-BY-CREATE,
                    -- represents the service name in Rec. M.3208.1
                "Rec. X.790":serviceLocationList      GET SET-BY-CREATE,
                    -- represents the originating and terminating
                    -- locations in Rec. M.3208.1
                serviceAvailabilityDate       GET SET-BY-CREATE,
            terminatingLocationCP GET SET-BY-CREATE;;;
REGISTERED AS {m3108Part1ObjectClass 12};
```

6.4.4 Service Access Domain

```
serviceAccessDomain MANAGED OBJECT CLASS
    DERIVED FROM "Rec. X.721 | ISO/IEC 10165-2:1992":top;
    CHARACTERIZED BY
        serviceAccessDomainPackage PACKAGE
            BEHAVIOUR
            serviceAccessDomainBehaviour BEHAVIOUR
            DEFINED AS "This MO represents a Service Access Domain consisting of Service Access Groups having
                similar characteristics (e.g. supporting the same bandwidths). Although Rec. M.3208.1 specifies that a
                provider request number be provided by the SP, it is not included in this MO since this MO is created
                directly by the SC.";;
            ATTRIBUTES
                providerRequestNumber       GET,
                serviceCustomerContact      GET-REPLACE,
                sadId                       GET SET-BY-CREATE,
-- sadId can be provided by the SC, otherwise it is set by the SP; used as naming attribute
                listOfSags                  GET-REPLACE ADD-REMOVE,
                "Rec. X.790":serviceType    GET SET-BY-CREATE,
                serviceProviderContact      GET;
            NOTIFICATIONS
                "Rec.X.721 | ISO/IEC 10165-2:1992":objectDeletion,
                "Rec.X.721 | ISO/IEC 10165-2:1992":objectCreation;;;
    CONDITIONAL PACKAGES
        aliasNamePackage            PRESENT IF "aliasName was present in the service request",
        serviceDescriptionPackage   PRESENT IF "serviceDescription was present in the service request";
REGISTERED AS {m3108Part1ObjectClass 13};
```

6.4.5 Service Access Group

```
serviceAccessGroup MANAGED OBJECT CLASS
    DERIVED FROM "Rec. X.721 | ISO/IEC 10165-2:1992":top;
    CHARACTERIZED BY
        serviceAccessGroupPackage PACKAGE
            BEHAVIOUR
            serviceAccessGroupBehaviour BEHAVIOUR
                DEFINED AS "This MO represents a Service Access Group consisting of Service Access Points
                having similar characteristics (e.g. supporting the same bandwidths). If the administrative state is
                locked, then all the SAPs in the SAG are locked";;
            ATTRIBUTES
                sagId           GET SET-BY-CREATE,
                listOfSaps      GET-REPLACE ADD-REMOVE
                                    addToSagError
                                    removeFromSagError,
                sagLocation     GET SET-BY-CREATE;
            ACTIONS
                addSapsToSag;
            NOTIFICATIONS
                "Rec.X.721 | ISO/IEC 10165-2:1992":objectDeletion,
                "Rec.X.721 | ISO/IEC 10165-2:1992":objectCreation;;;
    CONDITIONAL PACKAGES
        aliasNamePackage            PRESENT IF "aliasName was present in the service request",
        "Rec. X.721 | ISO/IEC 10165-2:1992":administrativeStatePackage
                                    PRESENT IF "SLA supports it",
REGISTERED AS {m3108Part1ObjectClass 14};
```

6.5 Managed objects for resource fragment

6.5.1 Service Access Equipment

```
serviceAccessEquipmentView MANAGED OBJECT CLASS
    DERIVED FROM "Rec. X.721 | ISO/IEC 10165-2:1992":top;
    CHARACTERIZED BY
        serviceAccessEquipmentViewPackage PACKAGE
            BEHAVIOUR
                serviceAccessEquipmentViewBehaviour BEHAVIOUR
                DEFINED AS "The serviceAccessEquipment MO class represents customer-owned equipment that
                terminates LCS(s). The SC updates information in this MO to correctly reflect the actual state of the
                service access equipment in the SC's premises.";;
            ATTRIBUTES
                "Rec. M3100:1995": equipmentId          GET SET-BY-CREATE,
                listOfSaps                              GET-REPLACE ADD-REMOVE,
                "Rec. X.790:1995": locationAddress      GET SET-BY-CREATE;
            NOTIFICATIONS
                "Rec.X.721 | ISO/IEC 10165-2:1992": objectDeletion,
                "Rec.X.721 | ISO/IEC 10165-2:1992": objectCreation;;;
    CONDITIONAL PACKAGES
        reflectiveAdministrativeStatePackage
            PRESENT IF "SLA supports it",
        reflectiveOperationalStatePackage
            PRESENT IF "SLA supports it",
        equipmentTypePackage
            PRESENT IF "SLA supports it",
        equipmentManufacturerPackage
            PRESENT IF "SLA supports it",
        modelTypePackage
            PRESENT IF "SLA supports it",
```

```
        dateOfInstallationPackage
            PRESENT IF "SLA supports it",
        expectedDateOfInstallationPackage
            PRESENT IF "SLA supports it",
        procedurePackage
            PRESENT IF "SLA supports it";
REGISTERED AS {m3108Part1ObjectClass 15};
```

6.6 Packages

6.6.1 aliasNameInfoPackage

```
aliasNameInfoPackage  PACKAGE
    ATTRIBUTES
        aliasName          GET;
REGISTERED AS {m3108Part1Package 1};
```

6.6.2 aliasNamePackage

```
aliasNamePackage  PACKAGE
    ATTRIBUTES
        aliasName          GET SET-BY-CREATE;
REGISTERED AS {m3108Part1Package 2};
```

6.6.3 bandwidthInfoPackage

```
bandwidthInfoPackage  PACKAGE
    ATTRIBUTES
        bandwidth          GET;
REGISTERED AS {m3108Part1Package 3};
```

6.6.4 bandwidthPackage

```
bandwidthPackage  PACKAGE
BEHAVIOUR
    bandwidthPackageBehaviour BEHAVIOUR
        DEFINED AS "If the requested bandwidth cannot be provided by the SP, the SP shall return the value together
                with a reason code indicating that the bandwidth is not available.";;
    ATTRIBUTES
        bandwidth          GET SET-BY-CREATE;
REGISTERED AS {m3108Part1Package 4};
```

6.6.5 customerRequestNumberPackage

```
customerRequestNumberPackage  PACKAGE
    ATTRIBUTES
        customerRequestNumber     GET SET-BY-CREATE;
REGISTERED AS {m3108Part1Package 7};
```

6.6.6 dateOfInstallationPackage

```
dateOfInstallationPackage  PACKAGE
    ATTRIBUTES
        dateOfInstallation        GET;
REGISTERED AS {m3108Part1Package 8};
```

6.6.7 dailySchedulingInfoPackage

```
dailySchedulingInfoPackage  PACKAGE
    ATTRIBUTES
    "Rec. X.721 | ISO/IEC 10165-2":intervalsOfDay          GET;
REGISTERED AS {m3108Part1Package 9};
```

6.6.8 dailySchedulingCurrentPackage

```
dailySchedulingCurrentPackage  PACKAGE
BEHAVIOUR
    dailySchedulingCurrentPackageBehaviour BEHAVIOUR
        DEFINED AS "If the SC specifies a value and the SP is not able to accommodate the requested schedule, the
                SP must return a error with a reason code indicating that the schedule can not be met.";;
    ATTRIBUTES
    "Rec. X.721 | ISO/IEC 10165-2":intervalsOfDay
            GET SET-BY-CREATE;
REGISTERED AS {m3108Part1Package 10};
```

6.6.9 diversityInfoPackage

```
diversityInfoPackage  PACKAGE
        ATTRIBUTES
            diversity GET;
REGISTERED AS {m3108Part1Package 11};
```

6.6.10 diversityPackage

```
diversityPackage  PACKAGE
BEHAVIOUR
    diversityPackageBehaviour BEHAVIOUR
        DEFINED AS "In the case of partial success, the SP may indicate the common (i.e. non-diverse) components of
                the circuits (new and/or old) as a set of topological entities.";;
        ATTRIBUTES
            diversity GET SET-BY-CREATE;
REGISTERED AS {m3108Part1Package 12};
```

6.6.11 equipmentManufacturerPackage

```
equipmentManufacturerPackage PACKAGE
        ATTRIBUTES
            equipmentManufacturer          GET-REPLACE;
REGISTERED AS {m3108Part1Package 14};
```

6.6.12 equipmentTypePackage

```
equipmentTypePackage  PACKAGE
        ATTRIBUTES
            equipmentType          GET-REPLACE;
REGISTERED AS {m3108Part1Package 16};
```

6.6.13 expectedDateOfInstallationInfoPackage

```
expectedDateOfInstallationInfoPackage PACKAGE
        ATTRIBUTES
            expectedDateOfInstallation        GET;
REGISTERED AS {m3108Part1Package 17};
```

6.6.14 expectedDateOfInstallationPackage

```
expectedDateOfInstallationPackage PACKAGE
        ATTRIBUTES
            expectedDateOfInstallation      GET-REPLACE;
REGISTERED AS {m3108Part1Package 18};
```

6.6.15 externalSchedulerCurrentPackage

```
externalSchedulerCurrentPackage PACKAGE
        ATTRIBUTES
            "Rec. X.721 | ISO/IEC 10165-2":schedulerName        GET-REPLACE;
REGISTERED AS {m3108Part1Package 19};
```

6.6.16 externalSchedulerInfoPackage

```
externalSchedulerInfoPackage PACKAGE
        ATTRIBUTES
            "Rec. X.721 | ISO/IEC 10165-2":schedulerName        GET;
REGISTERED AS {m3108Part1Package 20};
```

6.6.17 initialServiceAdministrativeStateInfoPackage

```
initialServiceAdministrativeStateInfoPackage PACKAGE
        ATTRIBUTES
            requestedInitialServiceAdministrativeState          GET;
REGISTERED AS {m3108Part1Package 21};
```

6.6.18 initialServiceAdministrativeStatePackage

```
initialServiceAdministrativeStatePackage PACKAGE
    BEHAVIOUR
    initialServiceAdministrativeStateBehaviour      BEHAVIOUR
        DEFINED AS "If this package is not present then the value of the service, when created, is subject to the
                SLA.";;
    ATTRIBUTES
        requestedInitialServiceAdministrativeState
                GET SET-BY-CREATE;
REGISTERED AS {m3108Part1Package 22};
```

6.6.19 modelTypePackage

```
modelTypePackage  PACKAGE
    ATTRIBUTES
        modelType       GET-REPLACE;
REGISTERED AS {m3108Part1Package 23};
```

6.6.20 originatingLocationCPEInfoPackage

```
originatingLocationCPEInfoPackage  PACKAGE
    ATTRIBUTES
        originatingLocationCPE          GET;
REGISTERED AS {m3108Part1Package 25};
```

6.6.21 originatingLocationCPEModifyPackage

```
originatingLocationCPEModifyPackage PACKAGE
    ATTRIBUTES
        originatingLocationCPE          GET-REPLACE;
REGISTERED AS {m3108Part1Package 26};
```

6.6.22 originatingLocationCPEPackage

```
originatingLocationCPEPackage  PACKAGE
    ATTRIBUTES
        originatingLocationCPE          GET SET-BY-CREATE;
REGISTERED AS {m3108Part1Package 27};
```

6.6.23 originatingLocationCPInfoPackage

```
originatingLocationCPInfoPackage  PACKAGE
    ATTRIBUTES
        originatingLocationCP       GET;
REGISTERED AS {m3108Part1Package 28};
```

6.6.24 originatingLocationInfoPackage

```
originatingLocationInfoPackage  PACKAGE
    ATTRIBUTES
        originatingLocation         GET;
REGISTERED AS {m3108Part1Package 30};
```

6.6.25 originatingLocationSapInfoPackage

```
originatingLocationSapInfoPackage  PACKAGE
    ATTRIBUTES
        originatingLocationSap      GET;
REGISTERED AS {m3108Part1Package 31};
```

6.6.26 originatingLocationSapPackage

```
originatingLocationSapPackage  PACKAGE
    ATTRIBUTES
        originatingLocationSap      GET SET-BY-CREATE;
REGISTERED AS {m3108Part1Package 32};
```

6.6.27 procedurePackage

```
procedurePackage PACKAGE
    ATTRIBUTES
        procedure           GET-REPLACE;
REGISTERED AS {m3108Part1Package 33};
```

6.6.28 quantityInfoPackage

```
quantityInfoPackage   PACKAGE
    ATTRIBUTES
        quantity            GET;
REGISTERED AS {m3108Part1Package 35};
```

6.6.29 quantityPackage

```
quantityPackage   PACKAGE
    ATTRIBUTES
        quantity            GET SET-BY-CREATE;
REGISTERED AS {m3108Part1Package 36};
```

6.6.30 reflectiveOperationalStatePackage

```
reflectiveOperationalStatePackage PACKAGE
    ATTRIBUTES
        "Rec.X.721 | ISO/IEC 10165-2:1992":operationalState        GET-REPLACE;
REGISTERED AS { m3108Part1Package 37};
```

6.6.31 reflectiveAdministrativeStatePackage

```
reflectiveAdministrativeStatePackage PACKAGE
    ATTRIBUTES
        "Rec.X.721 | ISO/IEC 10165-2:1992":administrativeState      GET-REPLACE;
REGISTERED AS { m3108Part1Package 38};
```

6.6.32 routeInfoPackage

```
routeInfoPackage  PACKAGE
    ATTRIBUTES
        route           GET;
REGISTERED AS {m3108Part1Package 39};
```

6.6.33 routePackage

```
routePackage  PACKAGE
BEHAVIOUR
    routePackageBehaviourBEHAVIOUR
        DEFINED AS "The SP may reject the requested route with returning the reason code or may return alternate
            route when the requested route is not available."::
    ATTRIBUTES
        route           GET SET-BY-CREATE;
REGISTERED AS {m3108Part1Package 40};
```

6.6.34 serviceAdministrativeStatePackage

```
serviceAdministrativeStatePackage   PACKAGE
    ATTRIBUTES
        "Rec. X.721 | ISO/IEC 10164-2":administrativeStateGET-REPLACE;
REGISTERED AS {m3108Part1Package 41};
```

6.6.35 serviceAvailabilityDateInfoPackage

```
serviceAvailabilityDateInfoPackage  PACKAGE
    ATTRIBUTES
        serviceAvailabilityDate         GET;
REGISTERED AS {m3108Part1Package 42};
```

6.6.36 serviceAvailabilityDatePackage

```
serviceAvailabilityDatePackage  PACKAGE
BEHAVIOUR
    serviceAvailabilityDatePackageBehaviour BEHAVIOUR
        DEFINED AS "The Service Availability Date can be modified only if the service has not been established.";;
    ATTRIBUTES
        serviceAvailabilityDate         GET SET-BY-CREATE;
REGISTERED AS {m3108Part1Package 43};
```

6.6.37 serviceCustomerContactPackage

```
serviceCustomerContactPackage  PACKAGE
    ATTRIBUTES
        serviceCustomerContact          GET SET-BY-CREATE;
REGISTERED AS {m3108Part1Package 45};
```

6.6.38 serviceDescriptionInfoPackage

```
serviceDescriptionInfoPackage  PACKAGE
    ATTRIBUTES
        "Rec. X.790":serviceDescription     GET;
REGISTERED AS {m3108Part1Package 46};
```

6.6.39 serviceDescriptionPackage

```
serviceDescriptionPackage  PACKAGE
BEHAVIOUR
    serviceDescriptionPackageBehaviour BEHAVIOUR
        DEFINED AS "If the requested service class is not equal to the class of service provided by the SP, then the SP
            must supply the value, else it is optional.";;
    ATTRIBUTES
        "Rec. X.790":serviceDescription     GET SET-BY-CREATE;
REGISTERED AS {m3108Part1Package 47};
```

6.6.40 serviceProviderContactPackage

```
serviceProviderContactPackage  PACKAGE
    ATTRIBUTES
        serviceProviderContact          GET;
REGISTERED AS {m3108Part1Package 48};
```

6.6.41 serviceTerminationDateInfoPackage

```
serviceTerminationDateInfoPackage PACKAGE
    ATTRIBUTES
        serviceTerminationDate          GET;
REGISTERED AS {m3108Part1Package 49};
```

6.6.42 serviceTerminationDatePackage

```
serviceTerminationDatePackage PACKAGE
BEHAVIOUR
    serviceTerminationDatePackageBehaviour BEHAVIOUR
        DEFINED AS "If the SP cannot accept the date, an alternate date is provided.";;
    ATTRIBUTES
        serviceTerminationDate          GET SET-BY-CREATE;
REGISTERED AS {m3108Part1Package 50};
```

6.6.43 serviceTypeInfoPackage

```
serviceTypeInfoPackage PACKAGE
    ATTRIBUTES
        "Rec. X.790":serviceType        GET;
REGISTERED AS {m3108Part1Package 51};
```

6.6.44 terminatingLocationCPEInfoPackage

```
terminatingLocationCPEInfoPackage  PACKAGE
    ATTRIBUTES
        terminatingLocationCPE          GET;
REGISTERED AS {m3108Part1Package 52};
```

6.6.45 terminatingLocationCPEModifyPackage

```
terminatingLocationCPEModifyPackage PACKAGE
    ATTRIBUTES
        terminatingLocationCPE          GET-REPLACE;
REGISTERED AS {m3108Part1Package 53};
```

6.6.46 terminatingLocationCPEPackage

```
terminatingLocationCPEPackage  PACKAGE
    ATTRIBUTES
        terminatingLocationCPE          GET SET-BY-CREATE;
REGISTERED AS {m3108Part1Package 54};
```

6.6.47 terminatingLocationCPInfoPackage

```
terminatingLocationCPInfoPackage  PACKAGE
    ATTRIBUTES
        terminatingLocationCP           GET;
REGISTERED AS {m3108Part1Package 55};
```

6.6.48 terminatingLocationInfoPackage

```
terminatingLocationInfoPackage PACKAGE
    ATTRIBUTES
        terminatingLocation             GET;
REGISTERED AS {m3108Part1Package 57};
```

6.6.49 terminatingLocationSapInfoPackage

```
terminatingLocationSapInfoPackage  PACKAGE
    ATTRIBUTES
        terminatingLocationSap          GET;
REGISTERED AS {m3108Part1Package 58};
```

6.6.50 terminatingLocationSapPackage

```
terminatingLocationSapPackage  PACKAGE
    ATTRIBUTES
        terminatingLocationSap          GET-REPLACE;
REGISTERED AS {m3108Part1Package 59};
```

6.6.51 weeklySchedulingInfoPackage

```
weeklySchedulingInfoPackage  PACKAGE
    ATTRIBUTES
        "Rec. X.721 | ISO/IEC 10165-2": weekMask        GET;
REGISTERED AS {m3108Part1Package 60};
```

6.6.52 weeklySchedulingCurrentPackage

```
weeklySchedulingCurrentPackage  PACKAGE
BEHAVIOUR
    weeklySchedulingCurrentPackageBehaviour BEHAVIOUR
        DEFINED AS "If the SC specifies a value and the SP is not able to accommodate the requested schedule, the
                SP must return an error with a reason code indicating that the schedule can not be met.";;
    ATTRIBUTES
        "Rec. X.721 | ISO/IEC 10165-2":weekMask
            GET SET-BY-CREATE;
REGISTERED AS {m3108Part1Package 61};
```

6.7 Attributes

6.7.1 aliasName

```
aliasName     ATTRIBUTE
    WITH ATTRIBUTE SYNTAX M3108Part1ASN1Module.AliasName;
    MATCHES FOR EQUALITY, SUBSTRINGS;
REGISTERED AS {m3108Part1Attribute   1};
-- represents information in the M.3208.1 "Information flow" [3.3.3.1.1.2], [3.3.3.1.3.2], [3.3.3.2.1.2],
-- [3.3.3.2.6.2], [3.3.3.2.9.2], [3.3.3.3.1.2], [3.3.3.3.3.2], [3.3.3.4.1.2], [3.3.3.4.3.2], [3.3.3.4.4.2],
-- [3.3.3.4.6.2], [3.3.3.4.9.2], [3.3.3.7.1.2], [3.3.3.7.2.2]
```

6.7.2 bandwidth

```
bandwidth     ATTRIBUTE
    WITH ATTRIBUTE SYNTAX M3108Part1ASN1Module.Bandwidth;
    MATCHES FOR EQUALITY, ORDERING;
REGISTERED AS {m3108Part1Attribute   2};
-- represents Bandwidth, Link Connection Bandwidth information in the M.3208.1 "Information flow"
-- [3.3.3.1.1.2], [3.3.3.1.3.2], [3.3.3.2.1.2], [3.3.3.2.3.2], [3.3.3.2.4.2], [3.3.3.2.6.2], [3.3.3.2.9.2],
-- [3.3.3.3.1.2], [3.3.3.4.1.2], [3.3.3.3.3.2], [3.3.3.4.3.2], [3.3.3.4.4.2], [3,3.3.4.6.2], [3.3.3.4.9.2]
```

6.7.3 cp

```
cp   ATTRIBUTE
    WITH ATTRIBUTE SYNTAX M3108Part1ASN1Module.Cp;
    MATCHES FOR EQUALITY, SUBSTRINGS;
BEHAVIOUR
    cpBehaviour BEHAVIOUR
        DEFINED AS "This attribute identifies the connection point or the service node specified in Rec. M.3208.1";;
REGISTERED AS {m3108Part1Attribute   3};
-- represents information in the M.3208.1 "Information flow" [3.3.3.3.1.2], [3.3.3.3.3.2], [3.3.3.4.1.2],
-- [3.3.3.4.3.2], [3.3.3.4.4.2], [3.3.3.4.6.2], [3.3.3.4.9.2]
```

6.7.4 customerRequestNumber

```
customerRequestNumber     ATTRIBUTE
    WITH ATTRIBUTE SYNTAX M3108Part1ASN1Module.RequestNumber;
    MATCHES FOR EQUALITY, ORDERING;
REGISTERED AS {m3108Part1Attribute   4};
-- represents information in the M.3208.1 "Information flow" [3.3.3.9.1.2], [3.3.3.9.2.2]
```

6.7.5 dateOfInstallation

```
dateOfInstallation  ATTRIBUTE
    WITH ATTRIBUTE SYNTAX M3108Part1ASN1Module.Time;
    MATCHES FOR EQUALITY, ORDERING;
    BEHAVIOUR "Rec. X.721 | ISO/IEC 10165-2:1992":timeOrdering;
REGISTERED AS {m3108Part1Attribute   5};
```

-- represents information in the M.3208.1 "Information flow" [3.3.3.9.1.2], [3.3.3.9.2.2]

6.7.6 diversity

```
diversity  ATTRIBUTE
    WITH ATTRIBUTE SYNTAX M3108Part1ASN1Module.Diversity;
    MATCHES FOR EQUALITY;
BEHAVIOUR
    diversityBehaviour BEHAVIOUR
        DEFINED AS "This attribute identifies the topological entities from which the circuit should be diverse, or the
other circuits from which the circuit should be diverse, or the number of the circuits in the diverse group and the
topological entities from which the circuits in the group should be diverse.";;
REGISTERED AS {m3108Part1Attribute   6};
```

-- represents information in the M.3208.1 "Information flow" [3.3.3.1.1.2], [3.3.3.2.1.2], [3.3.3.2.4.2]

6.7.7 equipmentManufacturer

```
equipmentManufacturer       ATTRIBUTE
    WITH ATTRIBUTE SYNTAX M3108Part1ASN1Module.EquipmentManufacturer;
    MATCHES FOR EQUALITY, SUBSTRINGS;
REGISTERED AS {m3108Part1Attribute   7};
```

-- represents information in the M.3208.1 "Information flow" [3.3.3.9.1.2], [3.3.3.9.2.2]

6.7.8 equipmentType

```
equipmentType     ATTRIBUTE
    WITH ATTRIBUTE SYNTAX M3108Part1ASN1Module.EquipmentType;
    MATCHES FOR EQUALITY, SUBSTRINGS;
REGISTERED AS {m3108Part1Attribute   8};
```

-- represents information in the M.3208.1 "Information flow" [3.3.3.9.1.2], [3.3.3.9.2.2]

6.7.9 expectedDateOfInstallation

```
expectedDateOfInstallation  ATTRIBUTE
    WITH ATTRIBUTE SYNTAX M3108Part1ASN1Module.Time;
    MATCHES FOR EQUALITY, ORDERING;
REGISTERED AS {m3108Part1Attribute   9};
```

-- represents information in the M.3208.1 "Information flow" [3.3.3.9.1.2], [3.3.3.9.2.2]

6.7.10 listOfSags

```
listOfSags      ATTRIBUTE
    WITH ATTRIBUTE SYNTAX M3108Part1ASN1Module.ListOfSags;
    MATCHES FOR EQUALITY, SET-INTERSECTION, SET-COMPARISON;
REGISTERED AS {m3108Part1Attribute   10};
```

-- represents information in the M.3208.1 "Information flow" [3.3.3.7.1.2]

6.7.11 listOfSaps

listOfSaps ATTRIBUTE
WITH ATTRIBUTE SYNTAX M3108Part1ASN1Module.ListOfSaps;
MATCHES FOR EQUALITY, SET-INTERSECTION, SET-COMPARISON;
REGISTERED AS {m3108Part1Attribute 11};
-- represents Service Access Point Ids, Service Access Point
-- information in the M.3208.1 "Information flow" [3.3.3.7.4.2], [3.3.3.7.5.2], [3.3.3.9.1.2], [3.3.3.9.2.2]

6.7.12 modelType

modelType ATTRIBUTE
WITH ATTRIBUTE SYNTAX M3108Part1ASN1Module.ModelType;
MATCHES FOR EQUALITY, SUBSTRINGS;
REGISTERED AS {m3108Part1Attribute 12};
-- represents information in the M.3208.1 "Information flow" [3.3.3.9.1.2], [3.3.3.9.2.2]

6.7.13 numberOfUnspecifiedSaps

numberOfUnspecifiedSaps ATTRIBUTE
WITH ATTRIBUTE SYNTAX M3108Part1ASN1Module.NumberOfUnspecifiedSaps;
MATCHES FOR EQUALITY, ORDERING;
REGISTERED AS {m3108Part1Attribute 13};
-- represents information in the M.3208.1 "Information flow" [3.3.3.7.4.2]

6.7.14 originatingLocation

originatingLocation ATTRIBUTE
WITH ATTRIBUTE SYNTAX M3108Part1ASN1Module.OriginatingLocation;
MATCHES FOR EQUALITY;
REGISTERED AS {m3108Part1Attribute 14};
-- represents information in the M.3208.1 "Information flow" [3.3.3.1.1.2], [3.3.3.2.1.2]

6.7.15 originatingLocationCP

originatingLocationCP ATTRIBUTE
WITH ATTRIBUTE SYNTAX M3108Part1ASN1Module.Cp;
MATCHES FOR EQUALITY, SUBSTRINGS;
REGISTERED AS {m3108Part1Attribute 15};
-- represents information in the M.3208.1 "Information flow" [3.3.3.3.1.2], [3.3.3.3.3.2], [3.3.3.4.1.2],
-- [3.3.3.4.3.2], [3.3.3.4.4.2], [3.3.3.4.6.2], [3.3.3.4.9.2]

6.7.16 originatingLocationCPE

originatingLocationCPE ATTRIBUTE
WITH ATTRIBUTE SYNTAX M3108Part1ASN1Module.Cpe;
MATCHES FOR EQUALITY;
BEHAVIOUR
originatingLocationCPEBehaviour BEHAVIOUR
DEFINED AS "This attribute describes the type and make of the CPE that the LCS is connected to at the originating point of the circuit.";;
REGISTERED AS {m3108Part1Attribute 16};
-- represents Originating Location CPE Type information in the M.3208.1 "Information flow"
-- [3.3.3.1.1.2], [3.3.3.1.3.2], [3.3.3.2.1.2], [3.3.3.2.3.2], [3.3.3.2.6.2], [3.3.3.2.9.2]

6.7.17 originatingLocationSap

```
originatingLocationSap        ATTRIBUTE
      WITH ATTRIBUTE SYNTAX M3108Part1ASN1Module.Sap;
      MATCHES FOR EQUALITY;
BEHAVIOUR
      originatingLocationSAPBehaviour BEHAVIOUR
            DEFINED AS "This attribute identifies access point where the Leased Circuit Service originates.";;
REGISTERED AS {m3108Part1Attribute   17};
-- represents information in the M.3208.1 "Information flow" [3.3.3.1.1.2], [3.3.3.1.3.2], [3.3.3.2.1.2],
-- [3.3.3.2.4.2], [3.3.3.2.6.2], [3.3.3.2.9.2]
```

6.7.18 procedure

```
procedure      ATTRIBUTE
      WITH ATTRIBUTE SYNTAX M3108Part1ASN1Module.Procedure;
      MATCHES FOR EQUALITY;
BEHAVIOUR
      procedureBehaviour BEHAVIOUR
            DEFINED AS "This attribute describes the changes of the (test) procedure.";;
REGISTERED AS {m3108Part1Attribute   18};
-- represents Changes In Procedure information in the M.3208.1 "Information flow" [3.3.3.9.2.2]
```

6.7.19 providerRequestNumber

```
providerRequestNumber      ATTRIBUTE
      WITH ATTRIBUTE SYNTAX M3108Part1ASN1Module.RequestNumber;
      MATCHES FOR EQUALITY, ORDERING;
BEHAVIOUR
      providerRequestNumberBehaviour BEHAVIOUR
            DEFINED AS "This attribute is a unique identifier provided by the SP to identify the request. The
providerRequestNumber attribute is an attribute type whose distinguished value can be used as a RDN when naming an
instance of the current service request and service modify request object class";;
REGISTERED AS {m3108Part1Attribute  19 };
-- represents information in the M.3208.1 "Information flow" [ 3.3.3.1.1.2], [3.3.3.1.2.2], [3.3.3.1.3.2],
-- [3.3.3.1.4.2], [3.3.3.2.1.2], [3.3.3.2.4.2], [3.3.3.2.7.2], [3.3.3.2.8.2], [3.3.3.2.9.2], [3.3.3.3.1.2],
-- [3.3.3.3.2.2], [3.3.3.3.3.2], [3.3.3.3.4.2], [3.3.3.4.1.2], [3.3.3.4.4.2], [3.3.3.4.7.2], [3.3.3.4.8.2],
-- [3.3.3.4.9.2], [3.3.3.7.1.2]
```

6.7.20 quantity

```
quantity  ATTRIBUTE
      WITH ATTRIBUTE SYNTAX M3108Part1ASN1Module.Number;
      MATCHES FOR EQUALITY, ORDERING;
REGISTERED AS {m3108Part1Attribute  21 };
-- represents information in the M.3208.1 "Information flow" [3.3.3.1.1.2], [3.3.3.2.1.2], [3.3.3.2.4.2]
```

6.7.21 requestedInitialServiceAdministrativeState

```
requestedInitialServiceAdministrativeState ATTRIBUTE
      WITH ATTRIBUTE SYNTAX M3108Part1ASN1Module.RequestedInitialServiceAdministrativeState;
      MATCHES FOR EQUALITY;
REGISTERED AS {m3108Part1Attribute   22};
-- represents Service Administrative State, Link Connection Service Administrative State
--  information in the M.3208.1 "Information flow" [3.3.3.1.1.2], [3.3.3.3.1.2]
```

6.7.22 requestReceptionTime

```
requestReceptionTime        ATTRIBUTE
    WITH ATTRIBUTE SYNTAX M3108Part1ASN1Module.Time;
    MATCHES FOR EQUALITY, ORDERING;
    BEHAVIOUR "Rec. X.721 | ISO/IEC 10165-2:1992":timeOrdering;
REGISTERED AS {m3108Part1Attribute  23};
```

6.7.23 requestSequenceNumber

```
requestSequenceNumber     ATTRIBUTE
    WITH ATTRIBUTE SYNTAX M3108Part1ASN1Module.RequestNumber;
    MATCHES FOR EQUALITY;
BEHAVIOUR
    requestSequenceNumberBehaviour BEHAVIOUR
        DEFINED AS "The requestSequenceNumber attribute is an attribute type whose distinguished value can be
used as a RDN when naming an instance of the service request history record object class";;
REGISTERED AS {m3108Part1Attribute   24};
-- represents information in the M.3208.1 "Information flow" [3.3.3.1.3.2], [3.3.3.1.4.2], [3.3.3.2.4.2],
-- [3.3.3.3.3.2], [3.3.3.3.4.2]
```

6.7.24 route

```
route ATTRIBUTE
    WITH ATTRIBUTE SYNTAX M3108Part1ASN1Module.Route;
    MATCHES FOR EQUALITY;
REGISTERED AS {m3108Part1Attribute   25};
-- represents information in the M.3208.1 "Information flow" [3.3.3.1.1.2], [3.3.3.1.3.2], [3.3.3.2.1.2],
-- [3.3.3.2.3.2], [3.3.3.2.4.2], [3.3.3.2.6.2], [3.3.3.2.9.2]
```

6.7.25 sadId

```
sadId     ATTRIBUTE
    WITH ATTRIBUTE SYNTAX M3108Part1ASN1Module.SadId;
    MATCHES FOR EQUALITY;
BEHAVIOUR
    sadIDBehaviour BEHAVIOUR
        DEFINED AS "The sadID attribute is an attribute type whose distinguished value can be used as a RDN when
naming an instance of the service access domain object class";;
REGISTERED AS {m3108Part1Attribute   26};
-- represents information in the M.3208.1 "Information flow" [3.3.3.7.1.2], [3.3.3.7.2.2], [3.3.3.7.3.2]
```

6.7.26 sagId

```
sagId     ATTRIBUTE
    WITH ATTRIBUTE SYNTAX M3108Part1ASN1Module.SagId;
    MATCHES FOR EQUALITY;
BEHAVIOUR
    sagIDBehaviour BEHAVIOUR
        DEFINED AS "The sagID attribute is an attribute type whose distinguished value can be used as a RDN when
naming an instance of the service access group object class";;
REGISTERED AS {m3108Part1Attribute   27};
-- represents information in the M.3208.1 "Information flow" [3.3.3.7.2.2], [3.3.3.7.3.2], [3.3.3.7.4.2], [3.3.3.7.5.2]
```

6.7.27 sagLocation

```
sagLocation    ATTRIBUTE
      WITH ATTRIBUTE SYNTAX M3108Part1ASN1Module.SagLocation;
      MATCHES FOR EQUALITY;
REGISTERED AS {m3108Part1Attribute   28};
-- represents information in the M.3208.1 "Information flow" [3.3.3.7.2.2]
```

6.7.28 serviceAvailabilityDate

```
serviceAvailabilityDate ATTRIBUTE
      WITH ATTRIBUTE SYNTAX M3108Part1ASN1Module.Time;
      MATCHES FOR EQUALITY, ORDERING;
      BEHAVIOUR "Rec. X.721 | ISO/IEC 10165-2:1992":timeOrdering;
REGISTERED AS {m3108Part1Attribute   29};
-- represents Service Availability Date, Link Connection Availability Date information in the
-- M.3208.1 "Information flow" [3.3.3.1.1.2], [3.3.3.1.3.2], [3.3.3.2.1.2], [3.3.3.2.4.2], [3.3.3.2.6.2],
-- [3.3.3.2.9.2], [3.3.3.3.1.2], [3.3.3.3.3.2.], [3.3.3.4.1.2], [3.3.3.4.6.2], [3.3.3.4.9.2]
```

6.7.29 serviceCustomerContact

```
serviceCustomerContact       ATTRIBUTE
      WITH ATTRIBUTE SYNTAX M3108Part1ASN1Module.Contact;
      MATCHES FOR EQUALITY;
REGISTERED AS {m3108Part1Attribute   30};
-- represents Customer Contact information in the M.3208.1 "Information flow" [3.3.3.1.1.2],
-- [3.3.3.1.3.2], [3.3.3.2.1.2], [3.3.3.2.3.2], [3.3.3.2.6.2], [3.3.3.2.9.2], [3.3.3.3.1.2], [3.3.3.3.3.2],
-- [3.3.3.4.6.2], [3.3.3.4.9.2], [3.3.3.7.1.2]
```

6.7.30 serviceInstance

```
serviceInstance      ATTRIBUTE
      WITH ATTRIBUTE SYNTAX M3108Part1ASN1Module.ObjectInstance;
      MATCHES FOR EQUALITY;
REGISTERED AS {m3108Part1Attribute   31};
-- represents Circuit Number, Link Connection Identifier information in the M.3208.1 "Information
-- flow" [3.3.3.1.1.2], [3.3.3.1.2.2], [3.3.3.1.3.2], [3.3.3.2.1.2], [3.3.3.2.2.2], [3.3.3.2.3.2], [3.3.3.2.4.2],
-- [3.3.3.2.5.2], [3.3.3.2.6.2], [3.3.3.3.1.2], [3.3.3.3.2.2], [3.3.3.3.3.2], [3.3.3.4.1.2], [3.3.3.4.2.2],
-- [3.3.3.4.3.2], [3.3.3.4.5.2], [3.3.3.4.6.2], [3.3.3.4.9.2]
```

6.7.31 serviceProviderContact

```
serviceProviderContact ATTRIBUTE
      WITH ATTRIBUTE SYNTAX M3108Part1ASN1Module.Contact;
      MATCHES FOR EQUALITY;
REGISTERED AS {m3108Part1Attribute   32};
-- represents information in the M.3208.1 "Information flow" [3.3.3.1.1.2], [3.3.3.1.2.2], [3.3.3.2.1.2],
-- [3.3.3.2.2.2], [3.3.3.2.4.2], [3.3.3.3.1.2], [3.3.3.3.2.2], [3.3.3.4.1.2], [3.3.3.4.2.2], [3.3.3.4.3.2],
-- [3.3.3.4.4.2], [3.3.3.7.1.2]
```

6.7.32 serviceRequestState

```
serviceRequestState      ATTRIBUTE
      WITH ATTRIBUTE SYNTAX M3108Part1ASN1Module.ServiceRequestState;
      MATCHES FOR EQUALITY;
BEHAVIOUR
      serviceRequestStateBehaviour BEHAVIOUR
            DEFINED AS "This attribute represents the service request state specified in Rec. M.3208.1.";;
```

```
REGISTERED AS {m3108Part1Attribute   33};
-- represents Service Request State, Link Connection Request State information in the M.3208.1
-- "Information flow" [3.3.3.1.1.2], [3.3.3.1.2.2], [3.3.3.1.3.2], [3.3.3.2.7.2], [3.3.3.2.8.2], [3.3.3.3.1.2],
-- [3.3.3.3.3.2], [3.3.3.4.7.2], [3.3.3.4.8.2], [3.3.3.4.9.2]
```

6.7.33 serviceTerminationDate

```
serviceTerminationDate       ATTRIBUTE
     WITH ATTRIBUTE SYNTAX M3108Part1ASN1Module. ServiceTerminationDate;
     MATCHES FOR EQUALITY, ORDERING;
     BEHAVIOUR "Rec. X.721 | ISO/IEC 10165-2:1992":timeOrdering;
REGISTERED AS {m3108Part1Attribute   34};
-- represents Service Termination Date, Link Connection Termination Date, Link Termination Date
-- information in the M.3208.1 "Information flow" [3.3.3.1.1.2], [3.3.3.1.2.2], [3.3.3.1.3.2],
-- [3.3.3.2.1.2], [3.3.3.2.2.2], [3.3.3.2.3.2], [3.3.3.2.6.2], [3.3.3.3.1.2], [3.3.3.3.2.2], [3.3.3.3.3.2],
-- [3.3.3.4.1.2], [3.3.3.4.2.2], [3.3.3.4.3.2], [3.3.3.4.4.2], [3.3.3.4.6.2], [3.3.3.4.9.2]
```

6.7.34 terminatingLocation

```
terminatingLocation      ATTRIBUTE
     WITH ATTRIBUTE SYNTAX M3108Part1ASN1Module.TerminatingLocation;
     MATCHES FOR EQUALITY;
REGISTERED AS {m3108Part1Attribute   36};
-- represents information in the M.3208.1 "Information flow" [ 3.3.3.1.1.2], [3.3.3.2.1.2]
```

6.7.35 terminatingLocationCP

```
terminatingLocationCP ATTRIBUTE
     WITH ATTRIBUTE SYNTAX M3108Part1ASN1Module.Cp;
     MATCHES FOR EQUALITY, SUBSTRINGS;
REGISTERED AS {m3108Part1Attribute   37};
-- represents information in the M.3208.1 "Information flow" [3.3.3.3.1.2], [3.3.3.3.3.2], [3.3.3.4.1.2],
-- [3.3.3.4.3.2], [3.3.3.4.4.2], [3.3.3.4.6.2], [3.3.3.4.9.2]
```

6.7.36 terminatingLocationCPE

```
terminatingLocationCPE      ATTRIBUTE
     WITH ATTRIBUTE SYNTAX M3108Part1ASN1Module.Cpe;
     MATCHES FOR EQUALITY;
BEHAVIOUR
     terminatingLocationCPEBehaviour BEHAVIOUR
          DEFINED AS "This attribute describes the type and make of the CPE that the LCS is connected to at the
terminating point of the circuit.";;
REGISTERED AS {m3108Part1Attribute   38};
-- represents Originating Location CPE Type information in the M.3208.1 "Information flow"
-- [3.3.3.1.1.2], [3.3.3.1.3.2], [3.3.3.2.1.2], [3.3.3.2.3.2], [3.3.3.2.6.2], [3.3.3.2.9.2]
```

6.7.37 terminatingLocationSap

```
terminatingLocationSap       ATTRIBUTE
     WITH ATTRIBUTE SYNTAX M3108Part1ASN1Module.Sap;
     MATCHES FOR EQUALITY;
BEHAVIOUR
     terminatingLocationSAPBehaviour BEHAVIOUR
          DEFINED AS "This attribute identifies access point where the Leased Circuit Service terminates.";;
REGISTERED AS {m3108Part1Attribute   39};
-- represents information in the M.3208.1 "Information flow" [3.3.3.1.1.2], [3.3.3.1.3.2], [3.3.3.2.1.2],
-- [3.3.3.2.4.2], [3.3.3.2.6.2], [3.3.3.2.9.2]
```

6.8 Error messages

6.8.1 addToSagError

```
addToSagError  PARAMETER
      CONTEXT SPECIFIC-ERROR;
      WITH SYNTAX M3108Part1ASN1Module.AddToSagError;
      BEHAVIOUR addToSagErrorBehaviour BEHAVIOUR
            DEFINED AS "This error is issued if the request add a SAP to a SAG is invalid or if the SP cannot comply with
                  the request.";;
REGISTERED AS {m3108Part1Parameter  1};
```

6.8.2 bandwidthUnavailable

```
bandwidthUnavailable  PARAMETER
      CONTEXT SPECIFIC-ERROR;
      WITH SYNTAX M3108Part1ASN1Module.Null;
      BEHAVIOUR bandwidthUnavailableBehaviour BEHAVIOUR
            DEFINED AS "This error is issued if the SP does not have the bandwidth to comply with the request.";;
REGISTERED AS {m3108Part1Parameter  2};
```

6.8.3 CreateLCSError

```
createLCSError  PARAMETER
      CONTEXT SPECIFIC-ERROR;
      WITH SYNTAX M3108Part1ASN1Module.CreateLCSError;
      BEHAVIOUR createLCSErrorBehaviour BEHAVIOUR
            DEFINED AS "This error is issued if the request for LCS is invalid or if the SP cannot provide the requested
service.";;
REGISTERED AS {m3108Part1Parameter  3};
```

6.8.4 createLinkConnectionError

```
createLinkConnectionError  PARAMETER
      CONTEXT SPECIFIC-ERROR;
      WITH SYNTAX M3108Part1ASN1Module.CreateLinkConnectionError;
      BEHAVIOUR createLinkConnectionErrorBehaviour BEHAVIOUR
            DEFINED AS "This error is issued if the request for link connection service is invalid or if the SP cannot
provide the requested service.";;
REGISTERED AS {m3108Part1Parameter  4};
```

6.8.5 createSadError

```
createSadError  PARAMETER
      CONTEXT SPECIFIC-ERROR;
      WITH SYNTAX M3108Part1ASN1Module.CreateSadError;
      BEHAVIOUR createSadErrorBehaviour BEHAVIOUR
            DEFINED AS "This error is issued if the request for a SAD is invalid or if the SP cannot provide the requested
                  SAD.";;
REGISTERED AS {m3108Part1Parameter  5};
```

6.8.6 createSagError

```
createSagError  PARAMETER
      CONTEXT SPECIFIC-ERROR;
WITH SYNTAX M3108Part1ASN1Module.CreateSagError;
      BEHAVIOUR createSagErrorBehaviour BEHAVIOUR
            DEFINED AS "This error is issued if the request for a SAG is invalid or if the SP cannot provide the requested
                  SAG.";;
REGISTERED AS {m3108Part1Parameter  6};
```

6.8.7 deleteLCSError

```
deleteLCSError    PARAMETER
      CONTEXT SPECIFIC-ERROR;
      WITH SYNTAX M3108Part1ASN1Module.DeleteLCSError;
      BEHAVIOUR deleteLCSErrorBehaviour BEHAVIOUR
            DEFINED AS "This error is issued if the request to delete a LCS is incorrect.";;
REGISTERED AS {m3108Part1Parameter  7};
```

6.8.8 deleteLinkConnectionError

```
deleteLinkConnectionError  PARAMETER
      CONTEXT SPECIFIC-ERROR;
      WITH SYNTAX M3108Part1ASN1Module.DeleteLinkConnectionError;
      BEHAVIOUR deleteLinkConnectionErrorBehaviour BEHAVIOUR
            DEFINED AS "This error is issued if the request to delete a link connection service is incorrect.";;
REGISTERED AS {m3108Part1Parameter  8};
```

6.8.9 deleteSadError

```
deleteSadError PARAMETER
      CONTEXT SPECIFIC-ERROR;
      WITH SYNTAX M3108Part1ASN1Module.DeleteSadError;
      BEHAVIOUR deleteSadErrorBehaviour BEHAVIOUR
            DEFINED AS "This error is issued if the request to delete a SAD is incorrect, in particular, if the SAD contains
                  SAG(s).";;
REGISTERED AS {m3108Part1Parameter  9};
```

6.8.10 deleteSagError

```
deleteSagError  PARAMETER
      CONTEXT SPECIFIC-ERROR;
      WITH SYNTAX M3108Part1ASN1Module.DeleteSagError;
      BEHAVIOUR deleteSagErrorBehaviour BEHAVIOUR
            DEFINED AS "This error is issued if the request to delete a SAG is incorrect.";;
REGISTERED AS {m3108Part1Parameter  10};
```

6.8.11 modifyLCSError

```
modifyLCSError PARAMETER
      CONTEXT SPECIFIC-ERROR;
      WITH SYNTAX M3108Part1ASN1Module.ModifyLCSError;
      BEHAVIOUR modifyLcsErrorBehaviour BEHAVIOUR
            DEFINED AS "This error is issued if the SP cannot comply with the request.";;
REGISTERED AS {m3108Part1Parameter  11};
```

6.8.12 removeFromSagError

```
removeFromSagError PARAMETER
      CONTEXT SPECIFIC-ERROR;
      WITH SYNTAX M3108Part1ASN1Module.RemoveFromSagError;
      BEHAVIOUR removeFromSagErrorBehaviour BEHAVIOUR
            DEFINED AS "This error is issued if the request remove a SAP from a SAG is invalid or if the SP cannot
                  comply with the request.";;
REGISTERED AS {m3108Part1Parameter  12};
```

6.8.13 resourcesUnavailable

```
resourcesUnavailable  PARAMETER
      CONTEXT SPECIFIC-ERROR;
      WITH SYNTAX M3108Part1ASN1Module.Null;
      BEHAVIOUR resourcesUnavailableBehaviour BEHAVIOUR
            DEFINED AS "This error is issued if the SP does not have the resources to comply with the request.";;
REGISTERED AS {m3108Part1Parameter  13};
```

6.9 Notifications

6.9.1 lcsModifyProgressProblemReport

```
lcsModifyProgressProblemReport      NOTIFICATION
      BEHAVIOUR      lcsModifyProgressProblemReportBehaviour;
      WITH INFORMATION SYNTAX M3108Part1ASN1Module.LcsModifyProgressProblemReport;
REGISTERED AS {m3108Part1Notification 1};

lcsModifyProgressProblemReportBehaviour
      BEHAVIOUR
      DEFINED AS "This notification is used to report problems with a LCS modification request.";
```

6.9.2 lcsRequestProgressProblemReport

```
lcsRequestProgressProblemReport      NOTIFICATION
      BEHAVIOUR      lcsRequestProgressProblemReportBehaviour;
      WITH INFORMATION SYNTAX M3108Part1ASN1Module.LcsRequestProgressProblemReport;
REGISTERED AS {m3108Part1Notification 2};

lcsRequestProgressProblemReportBehaviour
      BEHAVIOUR
      DEFINED AS " This notification is used to report problems with a LCS request.";
```

6.9.3 linkConnectionModifyProgressProblemReport

```
linkConnectionModifyProgressProblemReport NOTIFICATION
      BEHAVIOUR      linkConnectionModifyProgressProblemReportBehaviour;
      WITH INFORMATION SYNTAX M3108Part1ASN1Module.LinkConnectionModifyProgressProblemReport;
REGISTERED AS {m3108Part1Notification 3};

linkConnectionModifyProgressProblemReportBehaviour
      BEHAVIOUR
      DEFINED AS "This notification is used to report problems with a link connection service modification     request.";
```

6.9.4 linkConnectionRequestProgressProblemReport

```
linkConnectionRequestProgressProblemReport NOTIFICATION
      BEHAVIOUR      linkConnectionRequestProgressProblemReportBehaviour;
      WITH INFORMATION SYNTAX M3108Part1ASN1Module.LinkConnectionRequestProgressProblemReport;
REGISTERED AS {m3108Part1Notification 4};

linkConnectionRequestProgressProblemReportBehaviour
      BEHAVIOUR
      DEFINED AS "This notification is used to report problems with a link connection service request.";
```

6.10 Actions

6.10.1 updateServiceRequest

```
updateServiceRequest   ACTION
      BEHAVIOUR       updateServiceRequestBehaviour;
      WITH INFORMATION SYNTAX M3108Part1ASN1Module.UpdateServiceRequest;
      WITH REPLY SYNTAX M3108Part1ASN1Module.UpdateServiceReply;
REGISTERED AS {m3108Part1Action 1};

updateServiceRequestBehaviour BEHAVIOUR
DEFINED AS "The updateServiceRequest action is used by the service customer to modify a non-completed service
request. The attributes that can be modified are identified by the service request object class. If the values provided by the
SP are different from the values requested by the SC, then the values of those attributes must be returned by the SP to the
SC. If as result of the action some other attribues have changed (e.g. the SC requests a different bandwidth, the request is
implemented, but the route has changed, then the values of those changed attributes must be included in the response
from the SP to the SC.";
```

6.10.2 AddSapsToSag

```
AddSapsToSag      ACTION
      BEHAVIOUR       AddSapsToSagBehaviour;
      WITH INFORMATION SYNTAX M3108Part1ASN1Module. AddSapsToSagInformation;
      WITH REPLY SYNTAX M3108Part1ASN1Module. AddSapsToSagResult;
REGISTERED AS {m3108Part1Action 2};

AddSapsToSagBehaviour BEHAVIOUR
DEFINED AS "This action is used to arrange service access points into SAGs. Contained service access points IDs are
added; if the service access points IDs are empty and the number of access service access points is provided, the SP adds
as many SAPs as specified in the number of SAPs; the SP further provides their IDs. If the number of SAPs is not
provided and no SAP IDs are specified, then the SP adds a single SAP to the SAG and provides its Id. If both the number
of SAPs and SAP IDs are present, then the SP adds the identified SAPs to the SAG, the SP further adds as many SAPs as
specified by the number of SAPs and provides their IDs. The SAP IDs must be present in case of an erroror if the SAP
IDs are provided by the SP to the SC in the reply value.";
```

6.11 Name bindings

6.11.1 currentLcsRequest-account

```
currentLcsRequest-account   NAME BINDING
      SUBORDINATE OBJECT CLASS currentLcsRequest AND SUBCLASSES;
      NAMED BY SUPERIOR OBJECT CLASS "Rec. X.790":account AND SUBCLASSES;
      WITH ATTRIBUTE providerRequestNumber;
      CREATE
            WITH-AUTOMATIC-INSTANCE-NAMING
                  createLCSError;
            DELETE DELETES-CONTAINED-OBJECTS
                  deleteLCSError;
REGISTERED AS {m3108Part1NameBinding 1};
```

6.11.2 lcsRequestHistoryRecord-currentLCSRequest

```
lcsRequestHistoryRecord-currentLCSRequest    NAME BINDING
      SUBORDINATE OBJECT CLASS lcsRequestHistoryRecord;
      NAMED BY SUPERIOR OBJECT CLASS currentLcsRequest AND SUBCLASSES;
      WITH ATTRIBUTE requestSequenceNumber;
REGISTERED AS {m3108Part1NameBinding 2};
```

6.11.3 lcsModifyRequest-lcs

```
lcsModifyRequest-lcs    NAME BINDING
        SUBORDINATE OBJECT CLASS lcsModifyRequest AND SUBCLASSES;
        NAMED BY SUPERIOR OBJECT CLASS lcs AND SUBCLASSES;
        WITH ATTRIBUTE providerRequestNumber;
        CREATE
        WITH-AUTOMATIC-INSTANCE-NAMING;
    DELETE;
REGISTERED AS {m3108Part1NameBinding 3};
```

6.11.4 currentLinkConnectionServiceRequest-account

```
currentLinkConnectionServiceRequest-account NAME BINDING
        SUBORDINATE OBJECT CLASS currentLinkConnectionServiceRequest
                AND SUBCLASSES;
        NAMED BY SUPERIOR OBJECT CLASS "Rec. X.790":account AND SUBCLASSES;
        WITH ATTRIBUTE providerRequestNumber;
        CREATE
            WITH-AUTOMATIC-INSTANCE-NAMING
            createLinkConnectionError;
        DELETE DELETES-CONTAINED-OBJECTS
            deleteLinkConnectionError;
REGISTERED AS {m3108Part1NameBinding 4};
```

6.11.5 linkConnectionServiceRequestHistoryRecord-currentLinkConnectionServiceRequest

```
linkConnectionServiceRequestHistoryRecord-currentLinkConnectionServiceRequest  NAME BINDING
    SUBORDINATE OBJECT CLASS linkConnectionServiceRequestHistoryRecord;
    NAMED BY SUPERIOR OBJECT CLASS currentLinkConnectionServiceRequest
            AND SUBCLASSES;
    WITH ATTRIBUTE requestSequenceNumber;
        BEHAVIOUR
            historyBindingBehaviour BEHAVIOUR
            DEFINED AS "The service provider creates a serviceRequestHistoryRecord of the initial service
            request (currentServiceRequest) values. The serviceRequestHistoryRecord is also created when the
            service customer issues an updateServiceRequest action towards a currentServiceRequest (and
            subclasses) and contains a record of the attribute values specified in the request.";;
REGISTERED AS {m3108Part1NameBinding 5};
```

6.11.6 linkConnectionServiceModifyRequest-linkConnectionService

```
linkConnectionServiceModifyRequest-linkConnectionService NAME BINDING
    SUBORDINATE OBJECT CLASS linkConnectionServiceModifyRequest;
    NAMED BY SUPERIOR OBJECT CLASS linkConnectionService
            AND SUBCLASSES;
    WITH ATTRIBUTE providerRequestNumber;
    CREATE
        WITH-AUTOMATIC-INSTANCE-NAMING;
    DELETE;
REGISTERED AS {m3108Part1NameBinding 6};
```

6.11.7 serviceAccessEquipmentView-account

```
serviceAccessEquipmentView-account      NAME BINDING
    SUBORDINATE OBJECT CLASS serviceAccessEquipmentView AND SUBCLASSES;
    NAMED BY SUPERIOR OBJECT CLASS "Rec. X.790":account AND SUBCLASSES;
    WITH ATTRIBUTE "Rec. M3100:1995":equipmentId;
    CREATE
        WITH-AUTOMATIC-INSTANCE-NAMING;
```

```
    DELETE;
REGISTERED AS {m3108Part1NameBinding 7};
```

6.11.8 linkConnectionService-account

```
linkConnectionService-account    NAME BINDING
    SUBORDINATE OBJECT CLASS linkConnectionService AND SUBCLASSES;
    NAMED BY SUPERIOR OBJECT CLASS "Rec. X.790":account AND SUBCLASSES;
    WITH ATTRIBUTE "Rec. X.790:1995": serviceID;
    CREATE
        WITH-AUTOMATIC-INSTANCE-NAMING;
    DELETE DELETES-CONTAINED-OBJECTS;
REGISTERED AS {m3108Part1NameBinding 8};
```

6.11.9 lcs-account

```
lcs-account  NAME BINDING
    SUBORDINATE OBJECT CLASS lcs AND SUBCLASSES;
    NAMED BY SUPERIOR OBJECT CLASS "Rec. X.790":account AND SUBCLASSES;
    WITH ATTRIBUTE "Rec. X.790:1995": serviceID;
    CREATE
        WITH-AUTOMATIC-INSTANCE-NAMING;
    DELETE DELETES-CONTAINED-OBJECTS;
REGISTERED AS {m3108Part1NameBinding 9};
```

6.11.10 serviceAccessDomain-account

```
serviceAccessDomain-account    NAME BINDING
    SUBORDINATE OBJECT CLASS serviceAccessDomain AND SUBCLASSES;
    NAMED BY SUPERIOR OBJECT CLASS "Rec. X.790":account AND SUBCLASSES;
    WITH ATTRIBUTE sadId;
        BEHAVIOUR
                serviceAccessDomainBindingBehaviour BEHAVIOUR
                DEFINED AS "An instance of this MO class can be created by the SC. An instance of this MO class
                can be deleted by the SC.";;
    CREATE
        WITH-AUTOMATIC-INSTANCE-NAMING
                createSadError;
    DELETE
                deleteSadError;
REGISTERED AS {m3108Part1NameBinding 10};
```

6.11.11 serviceAccessGroup-serviceAccessDomain

```
serviceAccessGroup-serviceAccessDomain          NAME BINDING
    SUBORDINATE OBJECT CLASS serviceAccessGroup;
    NAMED BY SUPERIOR OBJECT CLASS serviceAccessDomain AND SUBCLASSES;
    WITH ATTRIBUTE sagId;
        BEHAVIOUR
                serviceAccessGroupBindingBehaviour BEHAVIOUR
                DEFINED AS "An instance of this MO class can be created by the SC. An instance of this MO class
                can be deleted by the SC.";;
    CREATE
        WITH-AUTOMATIC-INSTANCE-NAMING
                createSagError;
        DELETE
                deleteSagError;
REGISTERED AS {m3108Part1NameBinding 11};
```

6.12 ASN.1 syntax

6.12.1 Rules of extensibility

The following types will be indicated as being extensible:

– ENUMERATED;

– named INTEGER;

– named BIT STRING;

– tagged SET;

– tagged SEQUENCE;

– tagged CHOICE.

Under the rules of extensibility new enumerations (for ENUMERATED types), new bit name assignments (for named BIT STRING types), new named numbers (for named INTEGER types), and new tagged elements (for tagged SET, SEQUENCE, and CHOICE types) may be added in future versions of this Recommendation.

When processing information in a System Management Application Protocol (SMAP) PDU, the accepting SMAP-machine shall ignore:

– enumerations not recognized;

– unrecognized named numbers;

– unrecognized named bits;

– unrecognized tagged elements of sets, sequences, and choices.

6.12.2 ASN.1 module

```
M3108Part1ASN1Module {ccitt recommendation m lcs(3108) serviceManagement(1) informationModel(0)
asn1Modules(2) asn1DefinedTypesModule(0)}

DEFINITIONS IMPLICIT TAGS ::=
BEGIN
-- EXPORTS everything
IMPORTS
        NameType
                FROM ASN1DefinedTypesModule {ccitt recommendation m gnm(100) informationModel(0)
asn1Modules(2) asn1DefinedTypesModule(0)}
        AdditionalInformation, AdditionalText, AdministrativeState, AttributeList, AvailabilityStatus,
        NotificationIdentifier, SourceIndicator
                FROM Attribute-ASN1Module {joint-iso-ccitt ms(9) smi(3) part2(2) asn1Module (2) 1}
        ObjectInstance
                FROM CMIP-1 {joint-iso-ccitt ms(9) cmip(1) modules(0) protocol(3)}
        LocationAddress, PersonReach
                FROM X790ASN1Module {itu-t(0) recommendation(0) x(24) x790(790) informationModel(0)
asn1module(2)}
;

m3108Part1InformationModel  OBJECT IDENTIFIER ::= {ccitt recommendation m lcs(3108) serviceManagement(1)
informationModel(0) }
m3108Part1ObjectClass OBJECT IDENTIFIER ::= {m3108Part1InformationModel managedObjectClass(1)}
m3108Part1Package OBJECT IDENTIFIER ::= {m3108Part1InformationModel package(2)}
m3108Part1Attribute OBJECT IDENTIFIER ::= {m3108Part1InformationModel attribute(3)}
m3108Part1NameBinding OBJECT IDENTIFIER ::= {m3108Part1InformationModel nameBinding(4)}
m3108Part1Notification OBJECT IDENTIFIER ::= {m3108Part1InformationModel  notification(5)}
m3108Part1Parameter OBJECT IDENTIFIER ::= {m3108Part1InformationModel  parameter(6)}
m3108Part1Action OBJECT IDENTIFIER ::= {m3108Part1InformationModel  action(7)}
```

```
AddSapsToSagInformation ::= SEQUENCE {
                        listOfSaps                      ListOfSaps      OPTIONAL,
                        numberOfServiceAccessPoints     INTEGER         OPTIONAL
                }

AddSapsToSagResult ::= CHOICE {
                        listOfSaps                      ListOfSaps,
                        addToSagError                   AddToSagError
                }

AddToSagError ::= ENUMERATED {
                        invalidSapId                    (0),
                        invalidSagId                    (1),
                        sapNotInAppropriateUsageState   (2),
                        resourcesNotAvailable           (3),
                        ...
                }

AliasName ::= PrintableString

Bandwidth ::= CHOICE {
        bitsPerSecond           [0] Number,
        kiloBitsPerSecond       [1] Number,
        megaBitsPerSecond       [2] Number,
        gigaBitsPerSecond       [3] Number,
        teraBitsPerSecond       [4] Number
-- , …
        }

CircuitId ::= NameType

CircuitNumber ::= Number

Contact ::= CHOICE{
        person          PersonReach,
        contactObject   ObjectInstance
-- the ObjectInstance points to an instance of a X.790 Contact object.
        }

Cp  ::= TopologicalEntity

Cpe ::= CHOICE { name   PrintableString,
                 object ObjectInstance
                }

CreateSadError ::= ENUMERATED {
                        invalidLocation                 (0),
                        invalidServiceType              (1),
                        invalidServiceDescription       (2),
                        ...
                }

CreateSagError ::= ENUMERATED {
                        invalidLocation                 (0),
                        invalidSagId                    (1),
                        invalidSadId                    (2),
                        ...
                }
```

```
CreateLCSError  ::= ENUMERATED {
                        unknownServiceDescription       (0),
                        unknownServiceType              (1),
                        resourcesUnavailable            (2),
                        requestedBandwidthNotAvailable  (3),
                        quantitySpecifiedOutOfRange     (4),
                        contractViolation               (5),
                        invalidValue                    (6),
                        requiredParameterNotAvailable   (7),
                        serviceCannotBeCompleted        (8),
                        invalidServiceTerminationDate   (9),
                        invalidSchedule                 (10),
                        invalidServiceAvailabilityDate  (11),
                        requestAlreadyClosed            (12),
                        invalidAddress                  (13),
                        nonExistentSAP                  (14),
                        ...
                }
CreateLinkConnectionError ::= ENUMERATED {
                        unknownServiceDescription                (0),
                        unknownServiceType                       (1),
                        resourcesUnavailable                     (2),
                        requestedLinkConnectionBandwidthNotAvailable (3),
                        contractViolation                        (4),
                        invalidValue                             (5),
                        requiredParameterNotAvailable            (6),
                        linkConnectionRequestCannotBeCompleted   (7),
                        invalidLinkConnectionTerminationDate     (8),
                        invalidLinkConnectionAvailabilityDate    (9),
                        nonExistentLinkConnectionPoint           (10),
                        ...
                }

DeleteLCSError   ::= ENUMERATED {
                        alreadyDeleted                                  (0),
                        invalidCircuitNumber                            (1),
                        invalidServiceTerminationDate                   (2),
                        notBeingInAppropriateServiceAdministrativeState (3),
                        contractViolation                               (4),
                        ...
                }

DeleteLinkConnectionError ::= ENUMERATED {
                        alreadyDeleted                                  (0),
                        invalidLinkConnectionIdentifier                 (1),
                        invalidLinkConnectionTerminationDate            (2),
                        notBeingInAppropriateLinkConnectionAdministrativeState (3),
                        contractViolation                               (4),
                        ...
                }

DeleteSadError ::= ENUMERATED {
                        invalidSadId            (0),
                        sadContainsSags         (1),
                        ...
                }
```

```
DeleteSagError ::= ENUMERATED {
                        invalidSagId                (0),
                        invalidSadId                (1),
                        ...
                    }

Diversity ::= CHOICE {
        topologicalElements [1] SET OF TopologicalEntity,
            -- the topological entities from which the circuit should be diverse --
        otherCircuits       [2] SET OF CircuitId,
            -- other circuits from which the circuit should be diverse --
        severalGroups       [3] SET OF SEQUENCE {
                                    numberOfCircuits    INTEGER,
            -- the number of circuits in the diverse group --
                                    topologicalElements SET OF TopologicalEntity
            -- the topological entities from which the circuits in the group should be diverse --

                                                        }
        }

EquipmentManufacturer ::= PrintableString

EquipmentType::= PrintableString

LcsModifyProgressProblemReport ::= SEQUENCE {
    sourceIndicator                     [1] SourceIndicator                     OPTIONAL,
    lcsModifyProgressProblemReportInfo  [2] LcsModifyProgressProblemReportInfo,
    notificationIdentifier              [3] NotificationIdentifier              OPTIONAL,
    additionalText                      [4] AdditionalText                      OPTIONAL,
    additionalInformation               [5] AdditionalInformation               OPTIONAL
                        }

LcsModifyProgressProblemReportInfo ::= ENUMERATED {
                            resourcesUnavailable            (0),
                            requestedBandwidthNotAvailable  (1),
                            ...
                        }

LcsRequestProgressProblemReport ::= SEQUENCE {
    sourceIndicator                     [1] SourceIndicator                     OPTIONAL,
    lcsRequestProgressProblemReportInfo [2] LcsRequestProgressProblemReportInfo,
    notificationIdentifier              [3] NotificationIdentifier              OPTIONAL,
    additionalText                      [4] AdditionalText                      OPTIONAL,
    additionalInformation               [5] AdditionalInformation               OPTIONAL
                        }

LcsRequestProgressProblemReportInfo ::= ENUMERATED {
                            resourcesUnavailable            (0),
                            requestedBandwidthNotAvailable  (1),
                            serviceCannotBeCompleted        (2),
                            invalidServiceAvailabilityDate  (3),
                            invalidAddress                  (4),
                            nonExistentSap                  (5),
                            ...
                        }
```

```
LinkConnectionModifyProgressProblemReport ::= SEQUENCE {
        sourceIndicator                 [1] SourceIndicator                 OPTIONAL,
        linkConnectionModifyProgressProblemReportInfo [2]
LinkConnectionModifyProgressProblemReportInfo,
        notificationIdentifier          [3] NotificationIdentifier          OPTIONAL,
        additionalText                  [4] AdditionalText                  OPTIONAL,
        additionalInformation           [5] AdditionalInformation           OPTIONAL
                }

LinkConnectionModifyProgressProblemReportInfo ::= ENUMERATED {
                        resourcesUnavailable                (0),
                        requestedBandwidthNotAvailable      (1),
                        ...
                }

LinkConnectionRequestProgressProblemReport ::= SEQUENCE {
        sourceIndicator                 [1] SourceIndicator                 OPTIONAL,
        linkConnectionRequestProgressProblemReportInfo [2]
LinkConnectionRequestProgressProblemReportInfo,
        notificationIdentifier          [3] NotificationIdentifier          OPTIONAL,
        additionalText                  [4] AdditionalText                  OPTIONAL,
        additionalInformation           [5] AdditionalInformation           OPTIONAL
                }

LinkConnectionRequestProgressProblemReportInfo ::= ENUMERATED {
                        resourcesUnavailable                                (0),
                        requestedLinkConnectionBandwidthNotAvailable        (1),
                        linkConnectionRequestCannotBeCompleted              (2),
                        nonExistentLinkConnectionPoint                      (3),
                                ...
                        }

ListOfSags ::= SET OF SagId

ListOfSaps ::= SET OF Sap

M3108FunctionalUnits ::= BIT STRING {
        basicTransportService               (0),
        transportServiceOrder               (1),
        transportServiceOrderHistory        (2),
        transportServiceModify              (3),
        transportResourceVisibility         (4)
        }

ModelType::= PrintableString

ModifyLCSError ::= UpdateLCSError

ModifyLinkConnectionError ::= ENUMERATED {
    requiredBandwidthNotAvailable       (0),
    resourcesUnavailable                (1),
    unknownRoute                        (2),
    serviceAdministrativeStateUnlocked  (3),
    ...
    }

NumberOfUnspecifiedSaps ::= INTEGER (1..MAX)
```

```
Name ::= PrintableString

Number ::= INTEGER (0..MAX)

Null ::= NULL

OriginatingLocation ::= LocationAddress


Procedure ::= CHOICE {
                    name        PrintableString,
                    number      INTEGER
                }

RemoveFromSagError ::= SEQUENCE {
                sourceIndicator             [1] SourceIndicator             OPTIONAL,
                removeFromSagErrorInfo      [2] RemoveFromSagErrorInfo,
                notificationIdentifier      [3]  NotificationIdentifier     OPTIONAL,
                additionalText              [4] AdditionalText              OPTIONAL,
                additionalInformation       [5] AdditionalInformation       OPTIONAL
                }

RemoveFromSagErrorInfo ::= ENUMERATED {
                                        invalidSapId                    (0),
                                        invalidSagId                    (1),
                                        sapNotInAppropriateUsageState   (2),
                                        ...
                                    }

RequestedInitialServiceAdministrativeState ::= AdministrativeState

RequestNumber ::= INTEGER (0..MAX)

Route ::= SEQUENCE OF TopologicalEntity

SadId ::= NameType

SagId ::= NameType

SagLocation ::= LocationAddress

Sap ::= PrintableString

ServiceRequestState ::=  ENUMERATED {
                                        pre-processing      (0),
                                        open-active         (1),
                                        pending             (2),
                                        closed              (3)
                                    }

ServiceTerminationDate ::= CHOICE { time            Time,
                                                    continous  NULL}
-- continous means that no termination date has been specified, this is the default value
-- for ServiceTerminationDate

Time ::= GeneralizedTime
-- without fractions of seconds, with time zone indication. --

TerminatingLocation ::= LocationAddress
```

```
TopologicalEntity ::= CHOICE { name     PrintableString,
                               object   ObjectInstance
                     }

UpdateLCSError ::= ENUMERATED {
                          invalidCpeType                          (0),
                          invalidSAP                              (1),
                          resourcesUnavailable                    (2),
                          requiredBandwidthNotAvailable           (3),
                          unknownRoute                            (4),
                          contractViolation                       (5),
                          serviceAdminstrativeStateUnlocked       (6),
                          invalidCircuitNumber                    (7),
                          invalidServiceTerminationDate           (8),
                          invalidSchedule                         (9),
                          invalidServiceAvailableState            (10),
                          invalidProviderRequestNumber            (11),
                          invalidAliasName                        (12),
                          ...
                     }

UpdateLinkConnectionError ::= ENUMERATED {
                          invalidLinkConnectionPoint              (0),
                          resourcesUnavailable                          (1),
                          requiredBandwidthNotAvailable                 (2),
                          contractViolation                             (3),
                          linkConnectionAdminstrativeStateUnlocked      (4),
                          invalidLinkConnectionIdentifier               (5),
                          invalidLinkConnectionTerminationState         (6),
                          invalidLinkConnectionAvailableState           (7),
                          invalidProviderRequestNumber                  (8),
                          invalidLinkConnectionAliasName                (9),
                          invalidSchedule                               (10),
                          ...
                     }

UpdateServiceRequest ::= AttributeList

UpdateServiceReply ::= SEQUENCE  {
                                   requestIdentifier  SEQUENCE {
                                          initialRequest   RequestNumber OPTIONAL,
                                          newRequest     RequestNumber
                                   } OPTIONAL,
                                   alternateValues        AttributeList OPTIONAL
                              }

OriginatingLocationCP ::= TopologicalEntity

OriginatingLocationSap ::= TopologicalEntity

TerminatingLocationCP ::= TopologicalEntity

TerminatingLocationSap ::= TopologicalEntity

END
```

7 Functional units

The services defined to support the functions specified in Recommendation M.3208.1 have been grouped into several functional units to allow negotiation of their use on an association (during association establishment), and to allow referencing by other Recommendations. Functional unit negotiation shall be performed as described in Recommendation X.701. The bit string defined in 6.12.2 shall be used to represent functional units. No TMN-specific user information is supplied during association release or aborts. Table 7-1 lists these functional units and their corresponding managed object classes and functions from Recommendation M.3208.1.

Table 7-1/M.3108.1 – Functional units, object classes, and functions

Functional unit	Object class(es)	Function(s) (M.3208.1)
Basic transport service	networkR1 account (subclass of) transportService, lcs, linkConnectionService, serviceAccessGroup, serviceAccessDomain	Create LCS (3.3.3.1.1) Delete LCS (3.3.3.1.2) Report creation of LCS (3.3.3.2.1) Report deletion of LCS (3.3.3.2.2) Report LCS configuration change (3.3.3.2.3) Control LCS administrative state (3.3.3.2.5) Link connection configuration (3.3.3.3) Create link connection service (3.3.3.3.1) Delete link connection service (3.3.3.3.2) Report creation of link connection service (3.3.3.4.1) Report deletion of link connection service (3.3.3.4.2) Report link connection service configuration change (3.3.3.4.3) Control link connection service administrative state (3.3.3.4.5) Reconfigurable leased circuit service configuration (3.3.3.5, 3.3.3.6) Service access domain configuration set (3.3.3.7) Create SAD (3.3.3.7.1) Create SAG (3.3.3.7.2) Delete SAG (3.3.3.7.3) Add SAPs to SAG (3.3.3.7.4) Remove SAPs from SAG (3.3.3.7.5)
Transport service order	networkR1 account (subclass of) currentServiceRequest	Create service request (3.3.3.1.1, 3.3.3.3.1) Cancel service request (3.3.3.1.4, 3.3.3.3.4) Report change of service request parameters (3.3.3.2.4, 3.3.3.4.4) Monitor progress of service request (3.3.3.2.7) Report progress of service request (3.3.3.2.8) Retrieve service request parameters (3.3.3.2.9, 3.3.3.4.9)

Table 7-1/M.3108.1 – Functional units, object classes, and functions *(concluded)*

Functional unit	Object class(es)	Function(s) (M.3208.1)
Transport service order history	networkR1 account (subclass of) serviceRequestHistoryRecord linkConnectionServiceRequestHistory Record, lcsRequestHistoryRecord	Modify service request (3.3.3.1.3)
Transport service modify	networkR1 account (subclass of) serviceModifyRecord, linkConnectionServiceModifyRequest, lcsModifyRequest	Modify LCS (3.3.3.1.3) Modify link connection service (3.3.3.3.3)
Transport resource visibility	networkR1 account serviceAccessEquipmentView (additional resource subject to SLA)	Access equipment status (3.3.3.9) Access equipment status update (3.3.3.9.1) Access equipment status inquiry (3.3.3.9.2)

7.1 Basic transport service functional unit

The basic transport service functional unit supports services (subject to service level agreement) on provisioned transport services with the exception of modification of the service characteristics. The service customer can modify parameters that are not affecting service, e.g. service customer contact.

7.2 Transport service order functional unit

The transport service order functional unit permits the service customer to issue requests for transport services and it makes visible the service order process. The service customer can provide missing parameters or change previously supplied parameters while the service order is in the pending or open/active states, i.e. not yet completed.

7.3 Transport service order history functional unit

The transport service order history functional unit allows the service provider to keep a history of all requests for modifications of the service order as issued by the service customer.

7.4 Transport service modify functional unit

The transport service modify functional unit allows the service customer to modify parameters of existing transport services.

7.5 Transport resource visibility functional unit

The transport service visibility functional unit provides visibility of transport resources. The set of transport resources made visible to the customer is not specified in this Recommendation and is in general subject to SLA.

7.6 Negotiation of functional units

This Recommendation assigns the following object identifier values:

{itu-t (0) recommendation(0) m(31) m3108(3108) part1(1) protocolSupport(1) functionalUnitPackage(1)}

as a value of the ASN.1 type FunctionalUnitPackageId defined in Recommendation X.701 to use for negotiating the following functional units:

0 basic transport service

1 transport service order

2 transport service order history

3 transport service modify

4 transport resource visibility

where the number identifies the bit positions in the BIT STRING assigned to the functional units, and the names referencing the functional units as defined in clause 7.

Within the systems management application context, the mechanism for negotiating the functional units is described in Recommendation X.701.

NOTE – The requirement to negotiate functional units is specified by the application context.

8 Conformance

8.1 Static conformance

A system claiming conformance to this Recommendation shall:

a) support the role of manager or agent or both, with respect to the FUs defined or referenced in this Recommendation;

b) support the transfer syntax derived from the encoding rules specified in Recommendation X.209 and named {joint-iso-ccitt asn(1) basicEncoding(1)}, for the purpose of generating and/or interpreting the MAPDUs defined by the abstract data types defined in this Recommendation for the role supported in a) above;

c) support at least one of the FUs defined in Table 7-1;

d) support the conformance requirements specified in Q.812 CMIP profile.

8.2 Dynamic conformance

The system shall, for the role for which conformance is claimed, support the elements of procedure defined in:

- Recommendation X.730 for the PT-GET, PT-CREATE, PT-DELETE, PT-SET services;
- Recommendation X.730 for the object creation reporting and object deletion reporting, if the create delete notifications are specified in the objects supported;
- Recommendation X.730 for the attribute value change reporting if the attribute value change notification is specified in the objects supported;
- Recommendation X.731 for the state change reporting service if the state change reporting notification is specified in the objects supported.

8.3 Conformance to managed object definitions

The managed objects supported by the open system for service provisioning shall comply with the syntax and semantics of the information model specified for the FUs to which conformance is claimed.

APPENDIX I

Protocol-independent object description

This appendix provides a protocol-independent description of the objects in the information model.

The protocol-independent description of the objects is based on the following template:

1) **Unique name** (within a uniquely identified module).

2) **Description**: general description of the object.

3) **Business purpose description**: provides traceability to specific business needs in Recommendation M.3208.1; traceability is provided though the title of the appropriate clause in Recommendation M.3208.1 and/or the number of the appropriate clause in Recommendation M.3208.1 enclosed in square brackets. In general, different combinations of MOs can support the same generic business need. The selection of the specific MOs in support of a management function is a local matter that may depend on local business practices. Therefore, the traceability provided here is not complete; it points only to one or two functions in Recommendation M.3208.1 that may be supported by the MO. Appendix II provides a more complete listing of the MOs that may support each of the management functions in Recommendation M.3208.1.

4) **Primary identifier**: the primary IDs for the modelling object.

5) **Attributes**

   Attribute name: for ease of reading, the attribute name is given in plain English, e.g. Alias name rather than aliasName; if the object definition includes any packages that consist only of attributes and/or behaviours, such packages are listed as entries under this appendix, and the attributes within the package are listed in parenthesis after the **package name**.

   Access modes (R = read; W = write, update; S = set to default)
   Optional or Mandatory
   Description of the attribute.

6) **Behaviour description**

   Creation When is the object created.

   Read When is the object read.

   Update When is the object updated.

   Action What actions are allowed on the object and when.

   Deletion When is the object deleted.

   Notifications Notifications emitted from the object.

7) **Notes/Comment**

   For an object class that is a subclass of another object class, the inherited properties are not repeated. Only differences from the superclass are shown in the descriptions below.

I.1 Generic service request fragment

I.1.1 currentServiceRequest

1) **Unique name**: currentServiceRequest.

2) **Description**: Represents information elements that are common to all service requests and updates to service requests. It is used as a superclass for defining service-specific, instantiable managed objects representing requests for specific services.

3) **Business purpose description**: Every information element (attribute, notification) in this object is listed in the "Create dedicated leased circuit service function" [3.3.3.1.1] in Recommendation M.3208.1; in particular, the attributes are listed under "Information Flow" [3.3.3.1.1.2]. However, since the currentServiceRequest object is designed a super class for service-specific objects, it does not contain all the information exchange listed in Recommendation M.3208.1 for "Create dedicated leased circuit service function".

4) **Primary identifier**: providerRequestNumber.

5) **Attributes**

Attribute name	Access mode	Optional/ Mandatory	Description
Provider request number	R	M	Unique identifier provided by the SP to identify the request.
Request reception time	R	M	The time when the service request was received by the service provider. Used to establish an order among requests, and changes to requests. Such ordering may be needed since, in case of conflicting changes to a request, the most recent change request is effective.
Initial service administrative state	R, W	O	The SC may specify the service administrative state when the service is created. Valid values are: **Unlocked** – Indicating that the LCS is available for use (provides service) by the SC. **Locked** – Indicating that the LCS is currently not providing service. The SC may use this value for pre-provisioning LCS(s). See Figure 5/M.3208.1 for an explanation of the Service Administrative State Model.
Customer request number	R	O	Unique identifier provided by the SC to identify the request.
Service termination date	R, W	O	The date at which the LCS will be made inactive. If the SC provides a termination date and the SP does not return a date, the requested date is accepted. In case the SP cannot accept the date, an alternate date is provided.
Alias name	R, W	O	Allows the customer to assign a "user-friendly" name to the service; this information has no meaning to the service provider.

Attribute name	Access mode	Optional/ Mandatory	Description
Daily scheduling (intervals of day)	R, W	O	Allows the customer to specify during which periods of the day the service shall be available.
Weekly scheduling (week mask)	R, W	O	Allows the customer to specify during which days of the week the service shall be available.
External scheduler (schedule name)	R, W	O	Allows the customer to point to an external scheduler which specifies when the service shall be available.
Service availability status	R	O	
Request sequence number	R	M	Allows the SP to "staple" together several changes to the same service request.
Service type	R, W (at create)	M	The type of leased circuit service offered by the SP. Service names are not subject to standardization and are defined by the contract between the SC and the SP.
Service provider contact	R	M	The provider contact information for use by the SC in resolving questions or problems with the service.
Service customer contact	R, W	M	The customer contact information for use by the SP in resolving questions or problems with the service.
Service availability date	R, W	M	Date the service is due to be provisioned and placed in the requested Service Administrative State, as requested by the SC.
Service request state	R	M	This parameter indicates that the request is in progress. Valid values are: **pre-processing** – Indicates that the service request is currently being checked for validity of request parameters. **open/active** – Indicates that the service request is open and is being actively processed. **Pending** – Indicating that the service request is deactivated for reasons such as waiting for additional information, completion of other supporting tasks. Activation from this pending state is required before processing can be continued. **Closed** – Indicates the service request is closed either as a result of successful completion or error or because the request was cancelled. See Figure 4/M.3208.1 for allowed state transitions.

Attribute name	Access mode	Optional/ Mandatory	Description
Service description	R, W at create	O	The name of a profile of service characteristics (associated with the service type) defined and supported by the SP. Examples of the service characteristics that may be included in the profile are directionality, channelization, signalling options, protection, quality of service objectives, application, etc. Service values of this attribute are not subject to standardization and are defined by the contract. If the requested service is not equal to the service provided by the SP, then the SP must supply the value; else, it is optional.

6) **Behaviour description**

Creation When the customer requests a service or changes the request.

Read When the customer wants to know what is being requested, after any number of changes by the customer.

Update When the customer decides to change (parts of) the request or as the processing of the request by the service provider proceeds and the status of the request evolves.

Action An action allows the SC to update some of the attributes. If the updates are not feasible, the SP returns error messages. If agreed upon in the SLA, the action causes the SP to create an instance of a history record in order to log the action.

Deletion When the service is made available to the customer, when the customer has requested cancellation of the service request and the request has been cancelled, when the service provider has determined that the service cannot be provided and has notified the customer thereof.

Notifications Object creation, object deletion.

7) **Notes/Comment**

I.1.2 serviceRequestHistoryRecord

1) **Unique name**: serviceRequestHistoryRecord.

2) **Description**: This MO represents historical record of SC initiated change to a pending service request. Values of attributes of this MO are set by the SP at the time of creation, based on an action issued by the SC against a pending request. Values of attributes in this MO cannot be changed.

3) **Business purpose**: This MO supports recording of generic information exchanged for the "Modify dedicated leased circuit service function" [3.3.3.1.3], in particular, the attributes in this MO correspond to information items listed in the "Information Flow" table [3.3.3.1.3.2].

4) **Primary identifier**: requestSequenceNumber.

5) **Attributes**

Attribute name	Access mode	Optional/ Mandatory	Description
Provider request number	R	M	Unique identifier provided by the SP to identify the request.
Request reception time	R	M	The time when the service request was received by the service provider. Used to establish an order among requests, and changes to requests. Such ordering may be needed since in case of conflicting changes to a request the most recent change request is effective.
Initial service administrative state	R	O	The SC may specify the service administrative state when the service is created. Valid values are: **Unlocked** – Indicating that the LCS is available for use (provides service) by the SC. **Locked** – Indicating that the LCS is currently not providing service. The SC may use this value for pre-provisioning LCS(s). See Figure 5/M.3208.1 for an explanation of the Service Administrative State Model.
Service termination date	R	O	The date at which the LCS will be made inactive. If the SC provides a termination date and the SP does not return a date, the requested date is accepted. In case the SP cannot accept the date, an alternate date is provided.
Alias name	R	O	Allows the customer to assign a "user-friendly" name to the service; this information has no meaning to the service provider.
Daily scheduling (intervals of day)	R	O	Allows the customer to specify during which periods of the day the service shall be available.
Weekly scheduling (week mask)	R	O	Allows the customer to specify during which days of the week the service shall be available.
External scheduler (schedule name)	R	O	Allows the customer to point to an external scheduler which specifies when the service shall be available.
Service customer contact	R	O	The customer contact information for use by the SP in resolving questions or problems with the service.
Service availability date	R	O	Date the service is due to be provisioned and placed in the requested Service Administrative State.
Service description	R	O	
Service type	R	O	

6) **Behaviour description**

Creation By SP when SC wants to modify a request for service.

Read When the SC wants to verify what changes in the service request were requested.

Update

Action

Deletion When the service is provided or when the SP notifies the SC that the requested service cannot be provided.

Notifications Object creation and object deletion.

7) **Notes/Comment**

I.1.3 serviceModifyRequest

1) **Unique name**: serviceModifyRequest.

2) **Description**: This MO represents SC's request to modify an existing service. It is a superclass from which service-specific subclasses are derived. When changes to the service occur as a result of such a modification request, or for any other reason, the MO representing the affected service (e.g. lcs or link connection service) will issue the appropriate attribute value change notifications. After all the modifications requested by the SC through this MO have been resolved, this MO instance will be deleted and a notification of its deletion shall be sent to the SC.

3) **Business purpose**: This MO represents generic information exchanged for the purpose of modifying an existing service, as described in "Modify dedicated leased circuit service function" [3.3.3.1.3], in particular, attributes in this MO correspond to generic information items in "Information Flow" [3.3.3.1.3.2].

4) **Primary identifier**: provider request number.

5) **Attributes**

Attribute name	Access mode	Optional/ Mandatory	Description
Provider request number	R	M	Unique identifier provided by the SP to identify the request.
Request reception time	R	M	The time when the service request was received by the service provider. Used to establish an order among requests, and changes to requests. Such ordering may be needed since in case of conflicting changes to a request the most recent change request is effective.
Service request state	R	M	
Service instance	R	M	
Alias name	R, W (at object creation)	O	Allows the customer to assign a "user-friendly" name to the service; this information has no meaning to the service provider.

Attribute name	Access mode	Optional/ Mandatory	Description
Daily scheduling (intervals of day)	R, W (at object creation)	O	Allows the customer to specify during which periods of the day the service shall be available.
Weekly scheduling (week mask)	R, W (at object creation)	O	Allows the customer to specify during which days of the week the service shall be available.
External scheduler (schedule name)	R, W (at object creation)	O	Allows the customer to point to an external scheduler which specifies when the service shall be available.
Service customer contact	R, W (at object creation)	O	The customer contact information for use by the SP in resolving questions or problems with the service.
Availability status	R, W (at object creation)	O	

6) **Behaviour description**

Creation When a change to an existing service is requested.

Read When the SC wishes to verify what changes were requested or what is the status of the request.

Update

Action

Deletion When the requested changes have been performed by the SP or when the SP reports to the SC that the requested changes cannot be performed.

Notifications Object creation and object deletion.

7) **Notes/Comment**

I.2 LCS request fragment

I.2.1 currentLcsRequest

1) **Unique name**: currentLcsRequest.

2) **Description**: This instantiable MO represents an SC request for LCS.

3) **Business purpose**: Every information element (attribute, notification) in this object is listed in the "Create dedicated leased circuit service function" [3.3.3.1.1] in Recommendation M.3208.1, in particular, the attributes are listed under "Information Flow" [3.3.3.1.1.2].

4) **Primary identifier**: See currentServiceRequest.

5) **Attributes**: See currentServiceRequest, plus:

Attribute name	Access mode	Optional/ Mandatory	Description
Originating location	R, W (at create only)	M	Physical location (e.g. street address) where the LCS originates.
Terminating location	R, W (at create only)	M	Physical location (e.g. street address) where the LCS terminates.
Quantity	R, W	O	The number of LCSs to be generated by the SP.
Bandwidth	R, W	O	The bandwidth to be provided by the SP.
Diversity	R, W	O	Diversity may be specified with respect to existing leased circuit(s) by identification of leased circuit(s) from which this (these) new leased circuit(s) shall be diverse, or by identification of the set of topological entities from which this (these) new leased circuit(s) shall be diverse. When more than one leased circuit is requested, diversity may be specified within the request. In this case, the SC specifies the number of diverse groups and the number of circuits within each group, and/or a set of topological entities.
Route	R, W	O	A sequence of topological entities over which LCS is provided (i.e. connection points, links, subnetworks). The SP may associate user-friendly names (i.e. city names) with such topological entities.
Originating location CPE	R, W	O	Describes the type and make of the CPE that the LCS is connected to at the originating point of the circuit.
Terminating location CPE	R, W	O	Describes the type and make of the CPE that the LCS is connected to at the terminating point of the circuit.
Originating location SAP	R, W	O	Access point where the leased circuit service originates.
Terminating location SAP	R, W	O	Access point where the leased circuit service terminates.

6) **Behaviour description**

Creation When the SC requests an LCS.

Read When the SC wants to verify the LCS request.

Update When the SC wants to change information in the LCS request or when the SP wants to update information in the LCS request.

Action When the SC wants to change information in the LCS.

Deletion When the SP provides the requested LCS to the SC or when the SP reports to the SC that the requested LCS cannot be provided.

Notifications Object creation, object deletion, attribute value change, report problems in progressing the LCS request.

7) **Notes/Comment**

I.2.2 lcsRequestHistoryRecord

1) **Unique name**: lcsRequestHistoryRecord.

2) **Description**: This MO provides a historical record of changes to a pending LCS request by the SC.

3) **Business purpose**: This MO supports the "Report change of leased circuit service request parameter function" [3.3.3.2.4], in particular, information items in "Information Flow" [3.3.3.2.4.2] and "Retrieve leased circuit service request parameters function [3.3.3.2.9], in particular, information in "Information Flow" [3.3.3.2.9.2].

4) **Primary identifier**: See currentLcsRequest.

5) **Attributes**: See currentLcsRequest, but the attribute values cannot change.

6) **Behaviour description**

Creation When the SC requests LCS or makes changes to a pending LCS request changes to an LCS request.

Read When the SC wishes to know the current information in the LCS request.

Update

Action

Deletion When the service is provided or when the SP notifies the SC that the requested service cannot be provided.

Notifications Object creation and object deletion.

7) **Notes/Comment**

I.2.3 lcsModifyRequestRecord

1) **Unique name**: lcsModifyRequestRecord.

2) **Description**: This MO represents a request to modify an existing LCS.

3) **Business purpose**: This MO represents information exchanged for the purpose of modifying an existing LCS, as described in "Modify dedicated leased circuit service function" [3.3.3.1.3], in particular, attributes in this MO correspond to information items in "Information Flow" [3.3.3.1.3.2].

4) **Primary identifier**: request sequence number.

5) **Attributes**: See serviceModifyRequestRecord, plus:

Attribute name	Access mode	Optional/ Mandatory	Description
Bandwidth	R, W	O	The bandwidth to be provided by the SP.
Diversity	R, W	O	Diversity may be specified with respect to existing leased circuit(s) by identification of leased circuit(s) from which this (these) new leased circuit(s) shall be diverse, or by identification of the set of topological entities from which this (these) new leased circuit(s) shall be diverse. When more than one leased circuit is requested, diversity may be specified within the request. In this case, the SC specifies the number of diverse groups and the number of circuits within each group, and/or a set of topological entities.
Route	R, W	O	A sequence of topological entities over which LCS is provided (i.e. connection points, links, subnetworks). The SP may associate user-friendly names (i.e. city names) with such topological entities.
Originating location CPE	R, W	O	Describes the type and make of the CPE that the LCS is connected to at the originating point of the circuit.
Terminating location CPE	R, W	O	Describes the type and make of the CPE that the LCS is connected to at the terminating point of the circuit.

6) **Behaviour description**

Creation When the SC wants to change an existing LCS.

Read When the SC wants to verify information in a request to change an existing LCS.

Update

Action

Deletion When the requested changes have been made by the SP or when the SP reports to the SC that the requested changes cannot be performed.

Notifications Object creation, object deletion, progress problem report.

7) **Notes/Comment**

I.3 Link connection service request fragment

I.3.1 currentLinkConnectionServiceRequest

1) **Unique name**: currentLinkConnectionServiceRequest.

2) **Description**: This instantiable MO represents an SC request for a link connection.

3) **Business purpose**: This MO represents information specified in "Create link connection function" [3.3.3.3.1], in particular, attributes in this MO correspond to information items in "Information Flow" [3.3.3.3.1.2].

4) **Primary identifier**: provider request number.

5) **Attributes**: See currentServiceRequest, plus:

Attribute name	Access mode	Optional/ Mandatory	Description
Bandwidth	R, W	O	The bandwidth to be provided by the SP.
Originating location CP	R, W	M	CP or SN, where the Link Connection originates. Must exist prior to provisioning. The SC may not know the name at the time of the request. SP must provide the name of the CP to the SC. SP cannot provision the service unless the CP is known. The SC must provide either the originating or terminating location connection point or both. If one of the points is at the customer premises, that point must be provided by the SC. If one of the points is in a network of a service provider other than the one receiving this request, it must be provided by the SC. If the link connection point name is not provided by the SC in the request and the response indicates the completion of the LC and the SC did not provide it in the request, then the value of this parameter must be provided by the SP in the response.
Terminating location CP	R, W	M	CP or SN, where the link connection terminates. Must exist prior to provisioning. The SC may not know the name at the time of the request. SP must provide the name of the CP to the SC. SP cannot provision the service unless the CP is known. If the link connection point name is not provided by the SC in the request and the response indicates the completion of the LC and the SC did not provide it in the request, then the value of this parameter must be provided by the SP in the response.

6) **Behaviour description**

Creation When the SC requests a link connection.

Read When the SC wants to verify a link connection request.

Update When the SC wants to change a link connection request or when the SP has additional information for the link connection request.

Action When the SC wants to change a link connection request.

Deletion When the requested link connection has been provided by the SP or when the SP reports to the SC that the requested link connection cannot be provided.

Notifications Object creation, object deletion, attribute value change.

7) **Notes/Comment**

I.3.2 linkConnectionServiceRequestHistoryRecord

1) **Unique name**: linkConnectionServiceRequestHistoryRecord.

2) **Description**: This MO represents a request to update either a previously issued request to create a link connection service, or a previous update against that link connection service request.

3) **Business purpose**: This MO supports information exchange specified in "Modify link connection function" [3.3.3.3.3], in particular, attributes in this MO correspond to information items in "Information Flow" [3.3.3.3.3.2].

4) **Primary identifier**: See serviceUpdateRequestRecord.

5) **Attributes**: See serviceRequestHistoryRecord, plus the additional attributes for currentLinkConnectionServiceRequest.

6) **Behaviour description**

Creation When the SC wants to change an existing link connection request.

Read When the SC wants to verify changes request to an existing link connection request.

Update

Action

Deletion When the requested link connection has been provided by the SP or when the SP reports to the SC that the requested link connection cannot be provided.

Notifications Object creation, object deletion.

7) **Notes/Comment**

I.3.3 linkConnectionServiceModifyRequest

1) **Unique name**: linkConnectionServiceModifyRequest.

2) **Description**: This MO represents a request to modify an existing link connection.

3) **Business purpose**: This MO supports information exchange specified in "Modify link connection function" [3.3.3.3.3], in particular, attributes in this MO correspond to information items in "Information Flow" [3.3.3.3.3.2].

4) **Primary identifier**: See serviceModifyRequest.

5) **Attributes**: See serviceModifyRequest plus:

Attribute name	Access mode	Optional/ Mandatory	Description
Bandwidth	R, W	O	The bandwidth to be provided by the SP.

6) **Behaviour description**

Creation When the SC wants to change an existing link connection.

Read When the SC wants to verify a request for changing an existing link connection.

Update

Action

Deletion When the requested changes have been implemented by the SP or when the SP reports to the SC that the requested changes cannot be made.

Notifications Object creation, object deletion, link connection modify progress problem report.

7) **Notes/Comment**

I.4 Service fragment

I.4.1 transportService

1) **Unique name**: transportService.

2) **Description**: This MO represents a transport service. This MO class cannot be instantiated; service-specific subclasses of this class can be instantiated. Values of attributes of subclasses of this MO class can be set through management operations or through the creation of an instance of a service-specific subclass of the serviceModifyRequestRecord MO class. It is expected that only one of those two methods for changing values of attributes of subclasses of this MO class will be supported on any specific interface.

3) **Business purpose**: This MO supports information exchange specified for "Retrieve link connection parameters by the service customer function" [3.3.3.4.6]; in particular, attributes in this MO correspond to some of the information items in "Information Flow" [3.3.3.4.6.2]. It further supports information exchange specified for "Retrieve leased circuit service parameters by the service customer function" [3.3.3.2.6]; in particular, attributes in this MO correspond to some of the information items in "Information Flow" [3.3.3.2.6.2].

4) **Primary identifier**: service ID.

5) **Attributes**

Attribute name	Access mode	Optional/ Mandatory	Description
Service ID	R	M	Circuit number or link connection identifier.
Administrative state	R, W	M	Valid values are: **Unlocked** – Indicating that the LCS is available for use (provides service) by the SC. **Locked** – Indicating that the LCS is currently not providing service. The SC may use this value for pre-provisioning LCS(s). See Figure 5/M.3208.1 for an explanation of the Service Administrative State Model.
Operational state	R	M	Indicates if the service is operational. Default value if parameter is absent is enabled.
Service type	R	M	Corresponds to service name in Recommendation M.3208.1.
Service location list	R	M	Represents the originating and terminating locations in Recommendation M.3208.1.
Bandwidth	R, W	M	
Service provider contact	R	M	The provider contact information for use by the SC in resolving questions or problems with the service.

Attribute name	Access mode	Optional/ Mandatory	Description
Service customer contact	R, W	M	The customer contact information for use by the SP in resolving questions or problems with the service.
Service availability date	R, W (at object creation)	M	Customer's requested start date, can be changed by the SP to the actual start date which may be different, depending on availability of SP's resources.
Service termination date	R, W	M	Date at which the SC wishes to terminate the service.
Alias name	R	O	Allows the customer to assign a "user-friendly" name to the service; this information has no meaning to the service provider.
Service description	R	O	Corresponds to service class in Recommendation M.3208.1.
Availability status	R, W	O	
Daily scheduling (intervals of day)	R, W	O	Allows the customer to specify during which periods of the day the service shall be available.
Weekly scheduling (week mask)	R, W	O	Allows the customer to specify during which days of the week the service shall be available.
External scheduler (schedule name)	R, W	O	Allows the customer to point to an external scheduler which specifies when the service shall be available.

6) **Behaviour description**

Creation When a requested service is made available by the SP to the SC.

Read When the SC wants to verify the service parameters.

Update When the parameters of the service change as result of a SC request or SP initiative.

Action

Deletion When the service is terminated.

Notifications Object creation, object deletion, state change notification, attribute value change, quality of service alarm.

7) **Notes/Comment**

I.4.2 lcs

1) **Unique name**: lcs.

2) **Description**: This instantiable MO represents an LCS.

3) **Business purpose**: This MO supports information exchange specified for "Retrieve leased circuit service parameters by the service customer function" [3.3.3.2.6]; in particular, attributes in this MO correspond to some of the information items in "Information Flow" [3.3.3.2.6.2].

4) **Primary identifier**: Service ID.

5) **Attributes**: See transportService, plus the following attributes:

Attribute name	Access mode	Optional/ Mandatory	Description
Diversity	R, W	O	Diversity may be specified with respect to existing leased circuit(s) by identification of leased circuit(s) from which this (these) new leased circuit(s) shall be diverse, or by identification of the set of topological entities from which this (these) new leased circuit(s) shall be diverse. When more than one leased circuit is requested, diversity may be specified within the request. In this case, the SC specifies the number of diverse groups and the number of circuits within each group, and/or a set of topological entities.
Route	R, W	O	A sequence of topological entities over which LCS is provided (i.e. connection points, links, subnetworks). The SP may associate user-friendly names (i.e. city names) with such topological entities.
Originating location CPE	R, W	O	Describes the type and make of the CPE that the LCS is connected to at the originating point of the circuit.
Terminating location CPE	R, W	O	Describes the type and make of the CPE that the LCS is connected to at the terminating point of the circuit.
Originating location SAP	R, W	M	Access point where the leased circuit service originates.
Terminating location SAP	R, W	M	Access point where the leased circuit service terminates.

6) **Behaviour description**

Creation When a requested LCS is provided.

Read When a SC wants to verify the parameters of an LCS.

Update When a SC wants to change some characteristics of an LCS.

Action

Deletion When the LCS is terminated.

Notifications See transportService.

7) **Notes/Comment**

I.4.3 linkConnectionService

1) **Unique name**: linkConnectionService.

2) **Description**: This instantiable MO represents a link connection service.

3) **Business purpose**: This MO supports information exchange specified for "Retrieve link connection parameters by the service customer function" [3.3.3.4.6]; in particular, attributes in this MO correspond to some of the information items in "Information Flow" [3.3.3.4.6.2].

4) **Primary identifier**: service ID.

5) **Attributes**: See transportService, plus the following attributes:

Attribute name	Access mode	Optional/ mandatory	Description
Originating location CP	R, W	M	CP or SN, where the link connection originates.
Terminating location CP	R, W	M	CP or SN, where the link connection terminates.

6) **Behaviour description**

Creation When a requested link connection is made available by the SP to the SC.

Read When the SC wants to verify the parameters of a link connection.

Update When the SC wants to change a link connection or when the SP changes a link connection in response to the SC's request or due to other circumstances.

Action

Deletion When the link connection is terminated.

Notifications See transportService.

7) **Notes/Comment**

I.5 Reconfigurable service fragment

I.5.1 serviceAccessDomain

1) **Unique name**: serviceAccessDomain.

2) **Description**: This MO represents a Service Access Domain consisting of Service Access Groups having similar characteristics (e.g. supporting the same bandwidths).

3) **Business purpose**: This MO represents information exchanged in "Create service access domain function" [3.3.3.7.1], in particular, its attributes correspond to information items in "Information Flow" [3.3.3.7.1.2].

4) **Primary identifier**: provider request number (for SAD creation request) or sadId (for existing SAD).

5) **Attributes**

Attribute name	Access mode	Optional/ Mandatory	Description
Provider request number	R	M	SP-specific identifier for a SAD create request.
SAD identifier	R	M	Uniquely identifies the SAD.
Service type	R	M	Corresponds to service name in Recommendation M.3208.1.
Service provider contact	R	M	The provider contact information for use by the SC in resolving questions or problems with the service.
Service customer contact	R, W	M	The customer contact information for use by the SP in resolving questions or problems with the service.
Alias name	R	O	Allows the customer to assign a "user-friendly" name to the service; this information has no meaning to the service provider.
Service description	R	O	Corresponds to service class in Recommendation M.3208.1.
List of SAGs	R, W	M	List of the SAGs making up the SAD.

6) **Behaviour description**

Creation When a SAD is created.

Read When the SC wants to verify the SAD's parameters.

Update When SAGs are added/removed from the SAD.

Action

Deletion When a SAD is deleted.

Notifications Notifications emitted from the object.

7) **Notes/Comment**

I.5.2 serviceAccessGroup

1) **Unique name**: serviceAccessGroup.

2) **Description**: This MO represents a Service Access Group consisting of Service Access Points having similar characteristics (e.g. supporting the same bandwidths).

3) **Business purpose**: This MO represents information exchanged in "Create service access group function" [3.3.3.7.2]; in particular, its attributes correspond to information items in "Information Flow" [3.3.3.7.2.2]; it further represents information exchanged in "Add service access points to service access group function" [3.3.3.7.4]; in particular, its attributes correspond to information items in "Information Flow" [3.3.3.7.4.2].

4) **Primary identifier**: SAG ID.

5) **Attributes**

Attribute name	Access mode	Optional/ Mandatory	Description
SAG ID	R	M	Uniquely identifies the SAG.
List of SAPs	R, W	M	Lists the SAPs that make up the SAG.
SAG location	R	M	Physical location (e.g. street address) of the SAG.
Alias name	R, W	O	User-friendly name for the SAG.
Number of unspecified SAPs	R, W	O	Number of SAPs in the SAG that are not individually identified in the list of SAPs.
Administrative state	R, W	O	Valid values are: **Unlocked** – Indicating that the LCS is available for use (provides service) by the SC. **Locked** – Indicating that the LCS is currently not providing service. The SC may use this value for pre-provisioning LCS(s).

6) **Behaviour description**

Creation When a SAG is created.

Read When the SC wants to verify the parameters of the SAG.

Update When SAPs are added/removed from the SAG or when other parameters are updated.

Action

Deletion When the SAG is terminated.

Notifications

7) **Notes/Comment**

I.6 Resource fragment

I.6.1 serviceAccessEquipment

1) **Unique name**: serviceAccessEquipment.

2) **Description**: The serviceAccessEquipment MO class represents customer-owned equipment that terminates the LCS.

3) **Business purpose**: This MO represents information exchanged in "Access equipment status update function" [3.3.3.9.1]; in particular, its attributes correspond to information items in "Information Flow" [3.3.3.9.1.2]; it further represents information exchanged in "Access equipment status inquiry function" [3.3.3.9.2]; in particular, its attributes correspond to information items in "Information Flow" [3.3.3.9.2.2].

4) **Primary identifier**: requipment ID.

5) **Attributes**

Attribute name	Access mode	Optional/ Mandatory	Description
Equipment ID	R, W	M	SC-provided unique identifier for the CPE.
SAP	R, W	M	SAP connected to the equipment.
Location address	R, W	M	Physical location of the CPE.
Administrative state	R, W	O	
Operational state	R, W	O	
Equipment type	R, W	O	
Equipment manufacturer	R, W	O	
Model type	R, W	O	
Date of installation	R, W	O	
Expected date of installation	R, W	O	
Procedure	R, W	O	

6) **Behaviour description**

Creation When the CPE is connected to a LCS or to a link connection.

Read When the SP wants to verify CPE parameters.

Update When the SC changes the CPE.

Action

Deletion When the CPE is not connected to any service provided by the SP.

Notifications Object creation, object deletion.

7) **Notes/Comment**

APPENDIX II

Mapping of M.3208.1 functions into M.3108.1 MOs

The mapping provided here refers to each function in Recommendation M.3208.1 by its clause number and title. Functions are grouped under the corresponding M.3208.1 function sets. For each M.3208.1 function, this mapping indicates one or more M.3108.1 MOs that may be used to support that function. In general, if more than one MO is indicated, then the decision on which MO(s) to select for that function is a local matter based on local business practices.

NOTE – Recommendation M.3208.1 does not include an explicit function specifying that the SP needs to keep a log of the SC's changes to a pending service request. However, this functionality is implicit in the request sequence number that the SP issues for every SC's modification of a pending service request. This is reflected by the inclusion of the history records in the modify services in the following:

M.3208.1 subclause	M.3208.1 Functions	M.3108.1 Managed objects
3.3.3.1	Dedicated leased circuit service configuration function set	
3.3.3.1.1	Create dedicated leased circuit service function	currentLcsRequest
3.3.3.1.2	Delete dedicated leased circuit service function	lcs
3.3.3.1.3	Modify dedicated leased circuit service function	lcs lcsModifyRequestRecord currentLcsRequest lcsRequestHistoryRecord
3.3.3.1.4	Cancel dedicated leased circuit service request function	currentLcsRequest
3.3.3.2	Dedicated leased circuit service status administration function set	
3.3.3.2.1	Report creation of leased circuit service to service customer function	lcs
3.3.3.2.2	Report deletion of leased circuit service to service customer function	lcs
3.3.3.2.3	Report configuration change of leased circuit service parameters to service customer function	lcs
3.3.3.2.4	Report change of leased circuit service request parameters function	currentLcsRequest
3.3.3.2.5	Control leased circuit service administrative state by the service customer function	lcs
3.3.3.2.6	Retrieve leased circuit service parameters by the service customer function	lcs
3.3.3.2.7	Monitor progress of the leased circuit service request function	currentLcsRequest
3.3.3.2.8	Report progress of the leased circuit service request function	currentLcsRequest
3.3.3.2.9	Retrieve leased circuit service request parameters function	currentLcsRequest
3.3.3.3	Link connection configuration service function set	currentLinkConnectionServiceRequest
3.3.3.3.1	Create link connection function	linkConnectionService
3.3.3.3.2	Delete link connection function	linkConnectionService
3.3.3.3.3	Modify link connection function	linkConnectionServiceModifyRequestRecord currentLinkConnectionServiceRequest linkConnectionServiceRequestHistoryRecord linkConnectionService
3.3.3.3.4	Cancel link connection request function	currentLinkConnectionServiceRequest

M.3208.1 subclause	M.3208.1 Functions	M.3108.1 Managed objects
3.3.3.4	Link connection status administration function set	
3.3.3.4.1	Report creation of link connection to service customer function	linkConnectionService
3.3.3.4.2	Report deletion of link connection to service customer function	linkConnectionService
3.3.3.4.3	Report configuration change of link connection parameters to service customer function	linkConnectionService
3.3.3.4.4	Report change of link connection request parameters function	currentLinkConnectionServiceRequest linkConnectionServiceModifyRequestRecord
3.3.3.4.5	Control link connection administrative state by the service customer function	linkConnectionService
3.3.3.4.6	Retrieve link connection parameters by the service customer function	linkConnectionService
3.3.3.4.7	Monitor progress of the link connection request function	currentLinkConnectionServiceRequest
3.3.3.4.8	Report progress of the link connection request function	currentLinkConnectionServiceRequest
3.3.3.4.9	Retrieve link connection request parameters function	currentLinkConnectionServiceRequest
3.3.3.5	Reconfigurable leased circuit service configuration function set	serviceAccessDomain serviceAccessGroup
3.3.3.6	Reconfigurable leased circuit service function set	serviceAccessDomain serviceAccessGroup
3.3.3.7	Service access domain configuration function set	serviceAccessDomain
3.3.3.7.1	Create service access domain function	serviceAccessDomain
3.3.3.7.2	Create service access group function	serviceAccessGroup
3.3.3.7.3	Delete service access group function	serviceAccessGroup
3.3.3.7.4	Add service access points to service access group function	serviceAccessGroup
3.3.3.7.5	Remove service access points from service access group function	serviceAccessGroup
3.3.3.8	Reconfigurable leased circuit service administration function set	see 3.3.3.2/M.3208.1 for all functions in this set
3.3.3.9	Access equipment status administration function set	
3.3.3.9.1	Access equipment status update function	serviceAccessEquipment
3.3.3.9.2	Access equipment status inquiry function	serviceAccessEquipment

APPENDIX III

UML diagrams for leased circuit service object model

III.1 Introduction

This appendix provides UML (Unified Modelling Language) diagrams to assist in explanation of the M.3208.1 leased circuit service object model.

III.2 UML class diagrams for inheritance of M.3208.1 object classes

In these diagrams (Figures III.1 to III.5), classes are shown as boxes with three sections, including: object class name in the top section; the attribute names in the second section (not filled in for these figures for readability); and access operations in the bottom section.

The operation "get( )" is used in the class diagrams to denote that the class attributes are readable after an instance of that class is created.

The operation "set( ) is used to denote that some (at least one) of the class attributes may be modified after an instance of that class is created.

UML class diagrams use large open-headed arrows to indicate inheritance relationships. When a class is related to another by inheritance, the operations from the superclass (the one which has the large arrowhead touching it) are also supported for the inherited class, but are not repeated in the operation section of the class box.

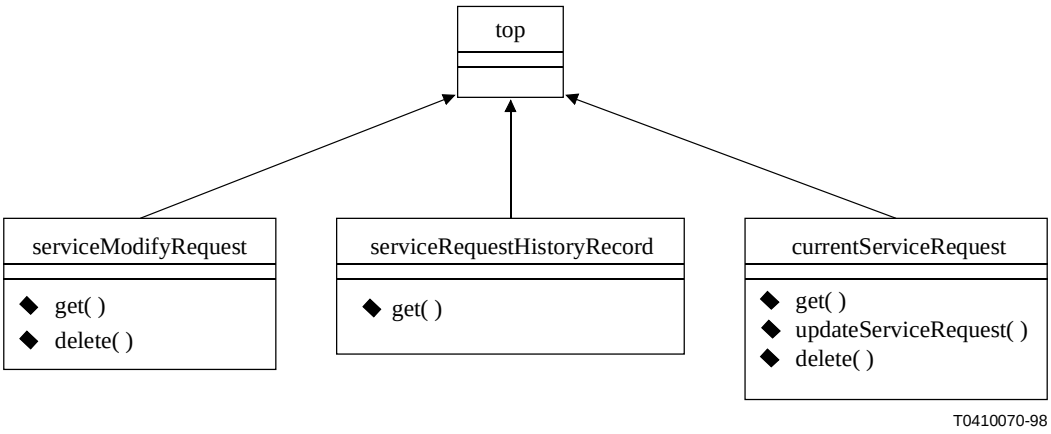


Figure III.1/M.3108.1 – Inheritance relationships for generic service request fragment

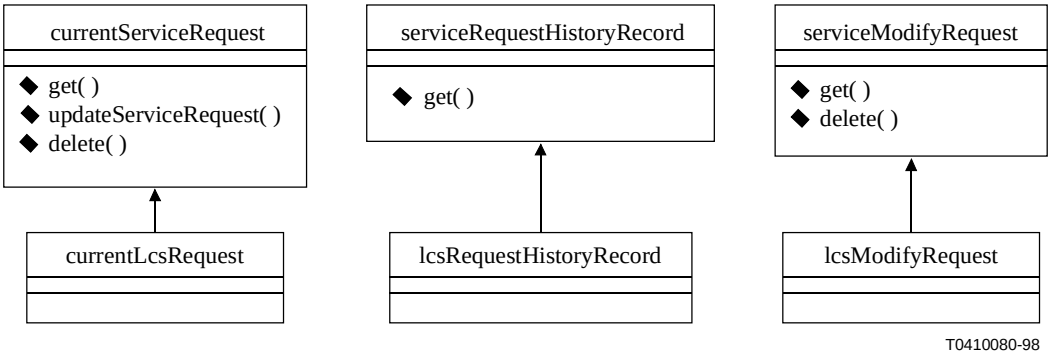


Figure III.2/M.3108.1 – Inheritance relationships for LCS request fragment

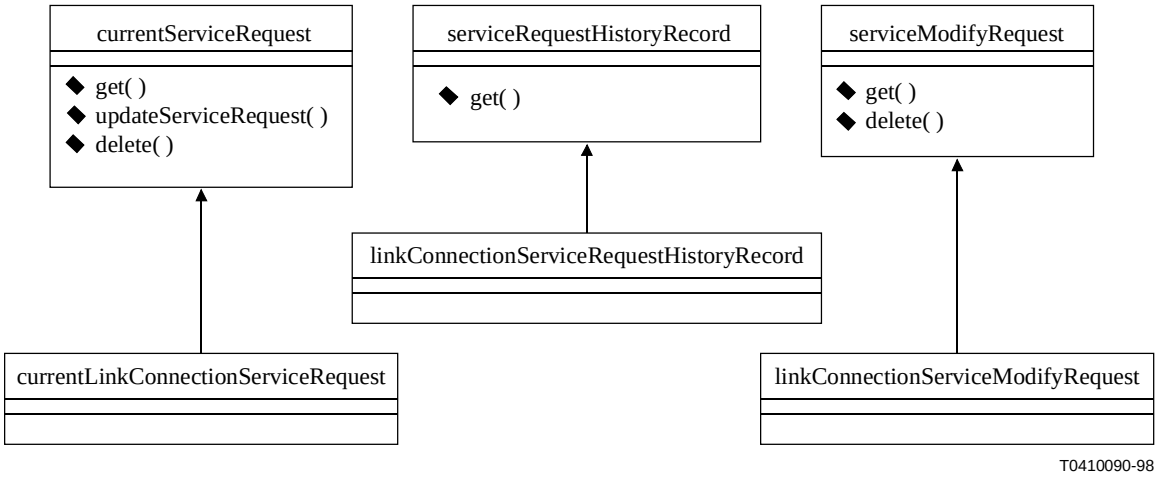
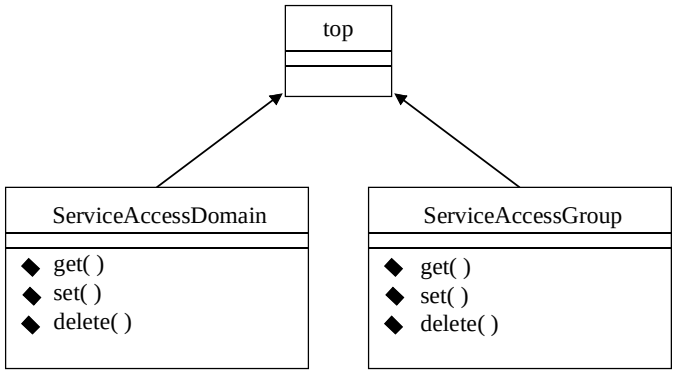
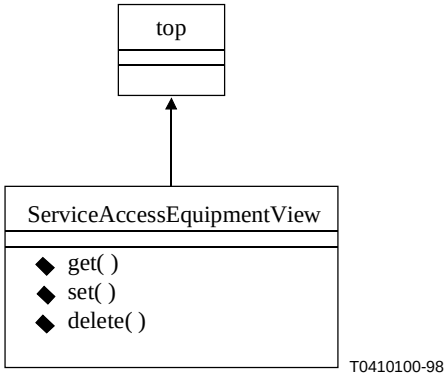


Figure III.3/M.3108.1 – Inheritance relationships for link connection service request fragment



Reconfigurable service fragment



Resource fragment

Figure III.4/M.3108.1 – Inheritance relationships for resource fragment and reconfigurable service fragment

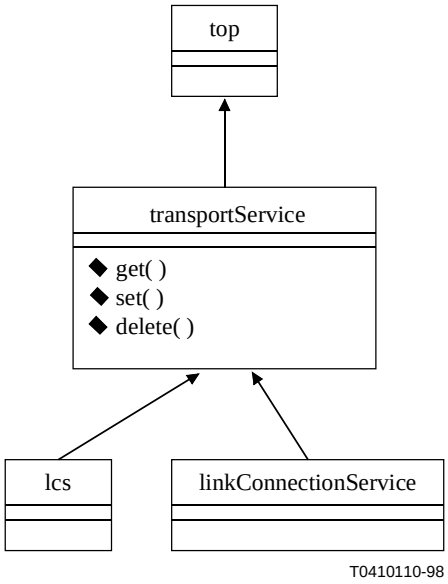


Figure III.5/M.3108.1 – Inheritance relationships for service fragment

III.3 UML class diagrams for modelling relationships

The possible relationships between instances are shown in UML class diagrams with associations (Figures III.6 and III.7). Containment relationships are denoted by a diamond headed line touching the parent (UML aggregation). Simple associations are shown with lines with roles indicates on the line ends. Relationship cardinalities are indicated by "0..*" or "1..*" tags on the end of the line representing a relationship.

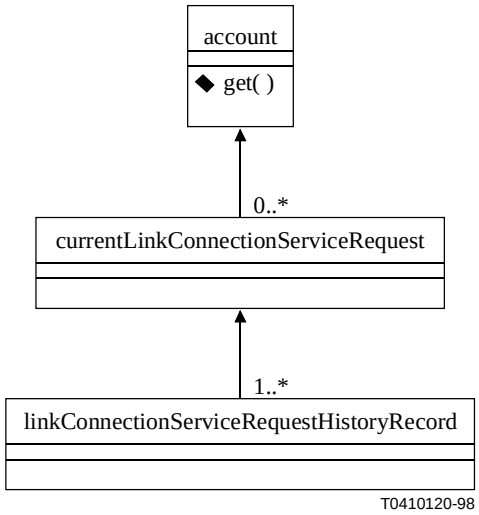


Figure III.6/M.3108.1 – Containment relationships for link connection service request with history records

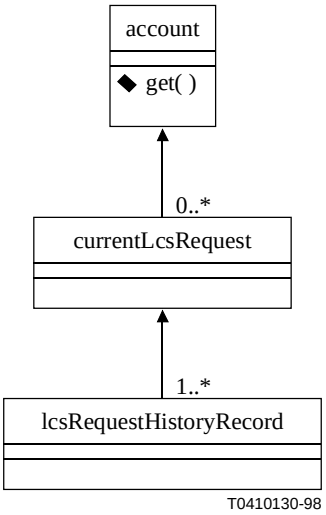


Figure III.7/M.3108.1 – Containment relationships for LCS request with history records

In Figure III.8, associations from account to service customer and service provider are shown, even though the classes "service customer" and "service provider" are not exposed as managed objects.

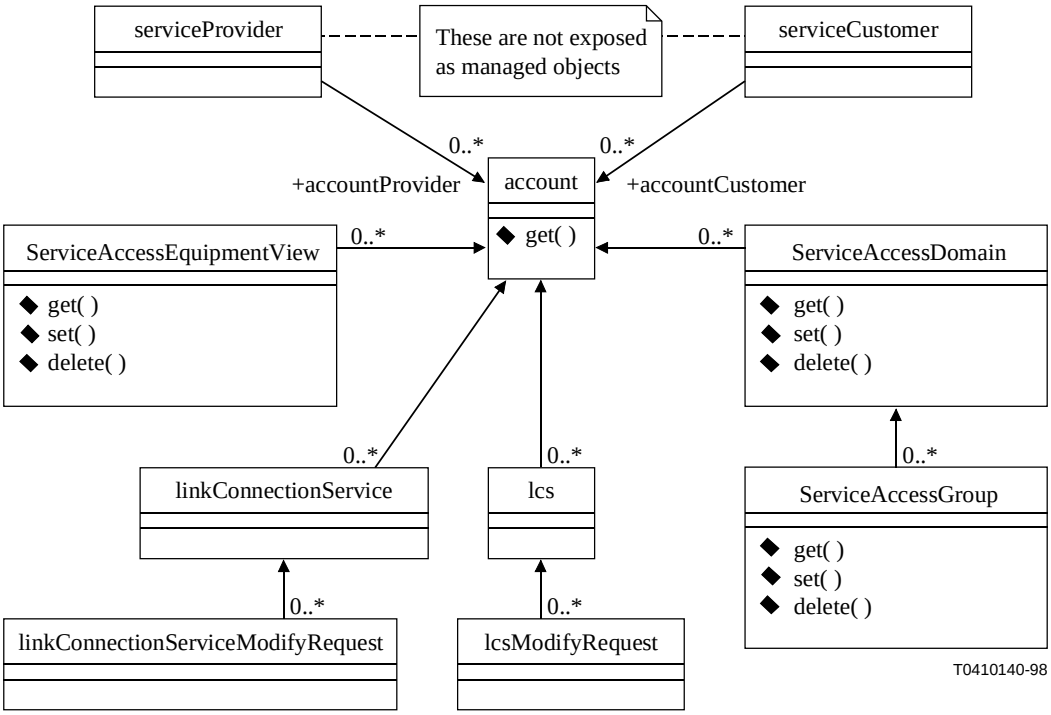
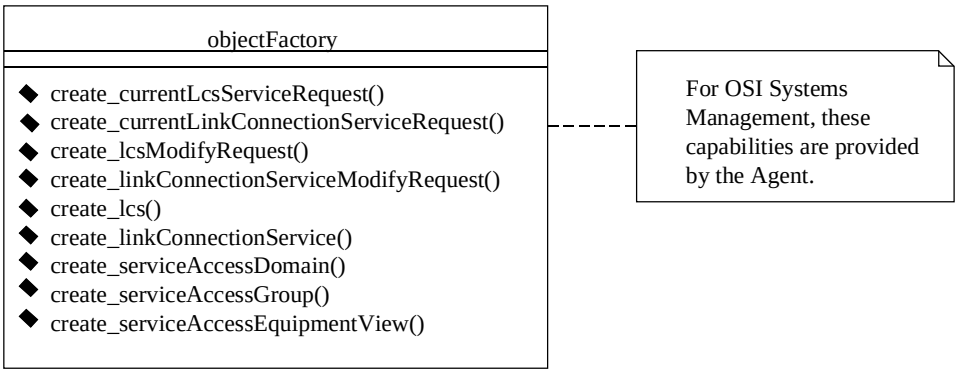


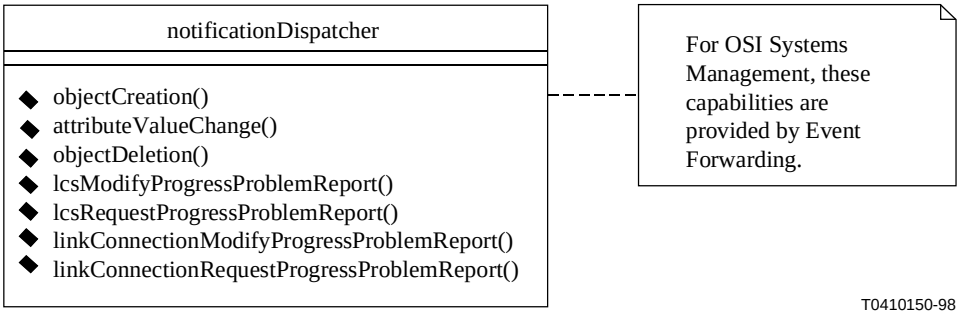
Figure III.8/M.3108.1 – UML model for relationships beyond service creation and update

III.4 UML class diagrams for modelling agent functionality

Some UML classes are introduced (factories and notification dispatcher) to model the actions for creating objects and distributing notifications from objects (Figure III.9). Instances of these agent functionality classes appear in the sequence diagrams. When a notification operation invocation is made onto a notification dispatch object, all destinations which have registered interest will receive a copy of that notification. These final delivery flows are not shown in the sequence diagrams in III.5, since many object may be interested in receiving them.



Factory with operations for customer to create service and request objects



Notification Dispatcher to receive and distribute notifications

Figure III.9/M.3108.1 – UML model for agent functions (creating objects and disseminating notifications)

III.5 UML sequence diagrams to illustrate scenarios of object usage

The sequence diagrams (Figures III.10 to III.15) in this subclause illustrate various scenarios discussed in the overview in clause 5.

The message flows from the notification dispatcher to the ultimate registered destinations are not shown in these diagrams. It would be normal for the customer (as well as other objects) to be a registered recipient for the notifications shown in these sequence diagrams).

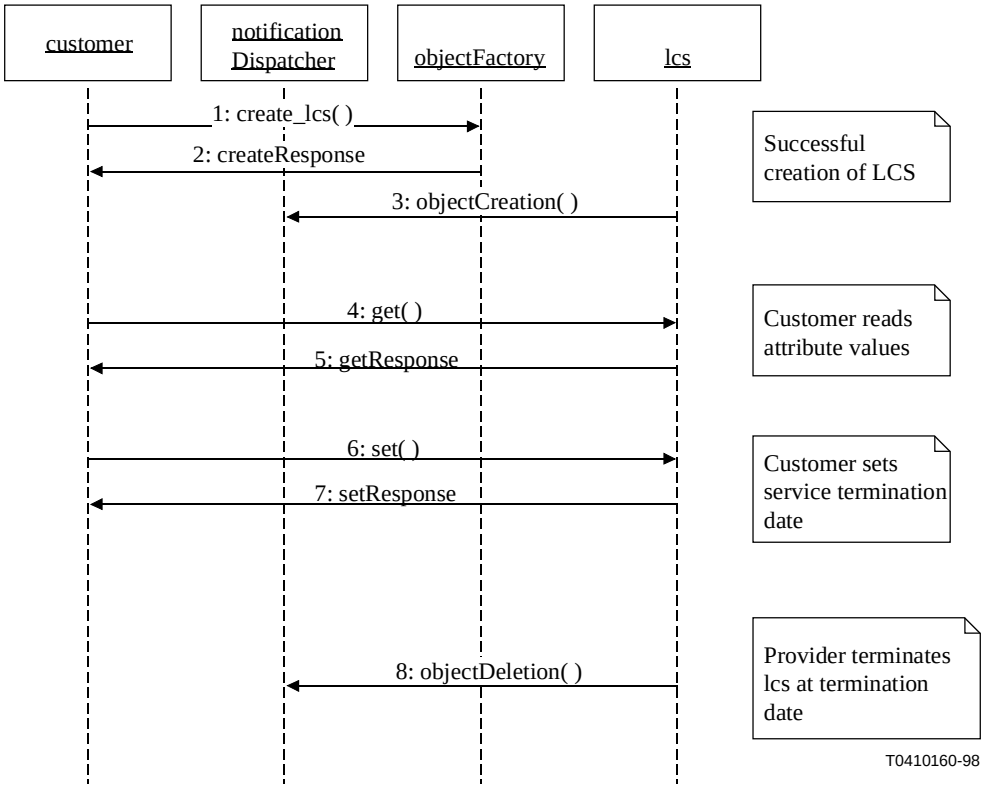


Figure III.10/M.3108.1 – Sequence diagram for explicit LCS create and automatic termination

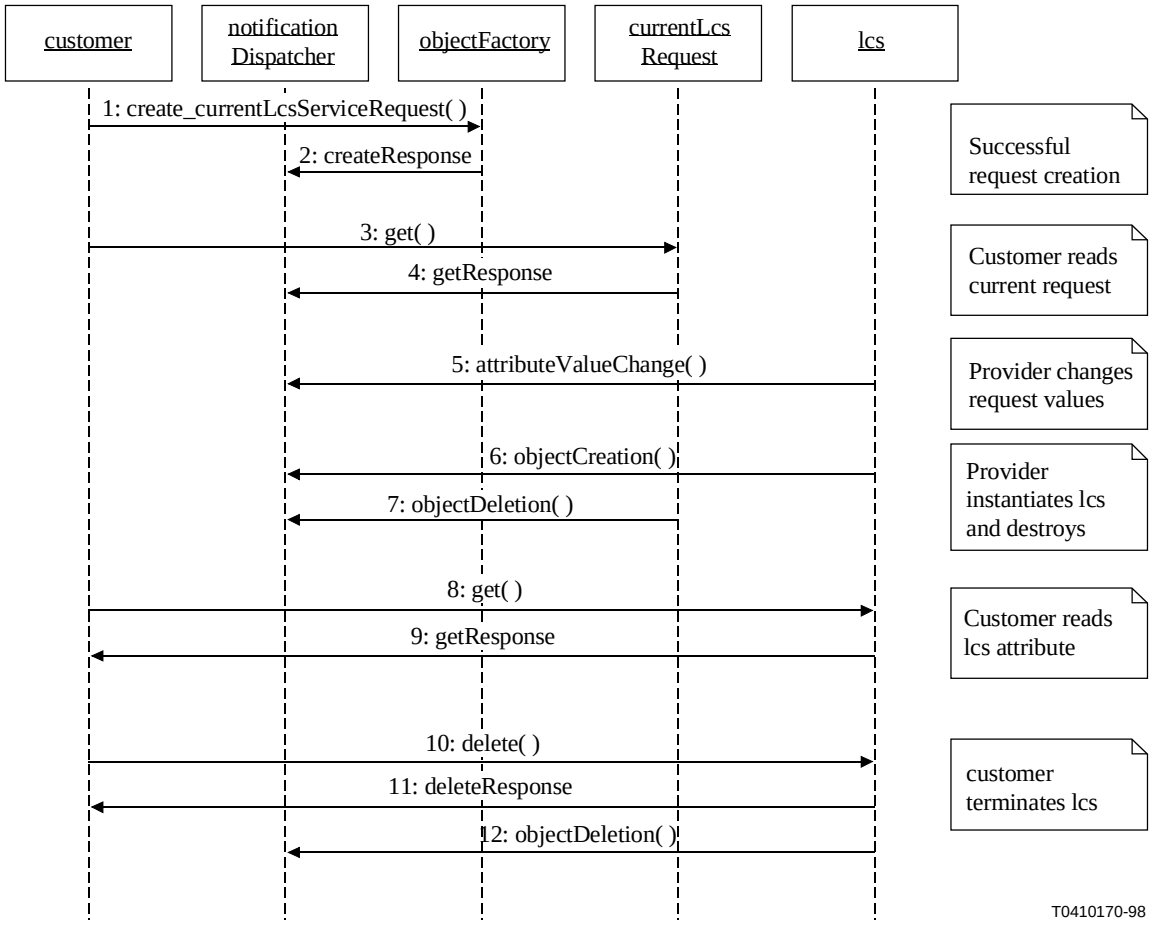


Figure III.11/M.3108.1 – Sequence diagram for instantiation of LCS using request and explicit deletion

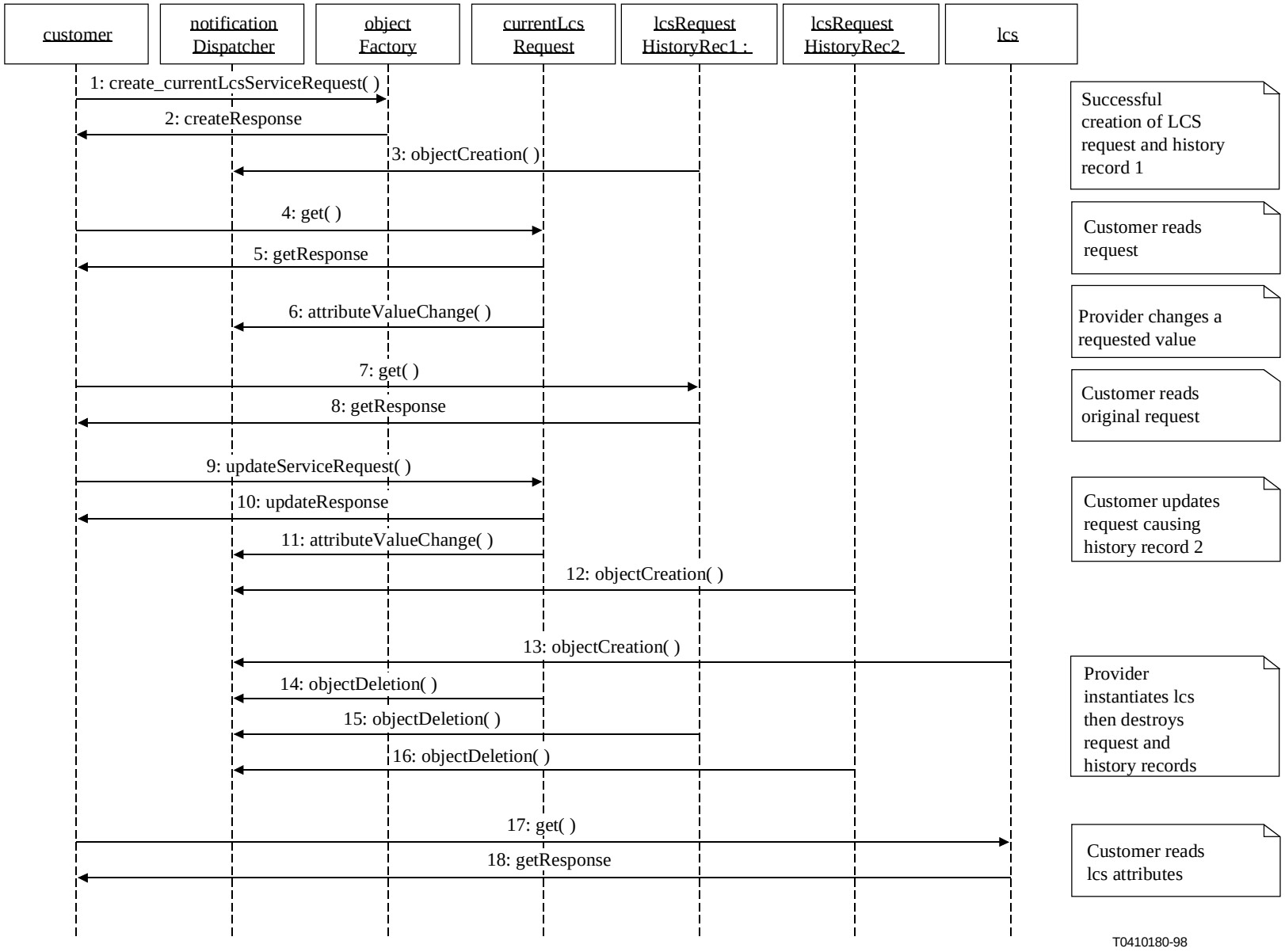


Figure III.12/M.3108.1 – Sequence diagram for instantiation of LCS using request and history records

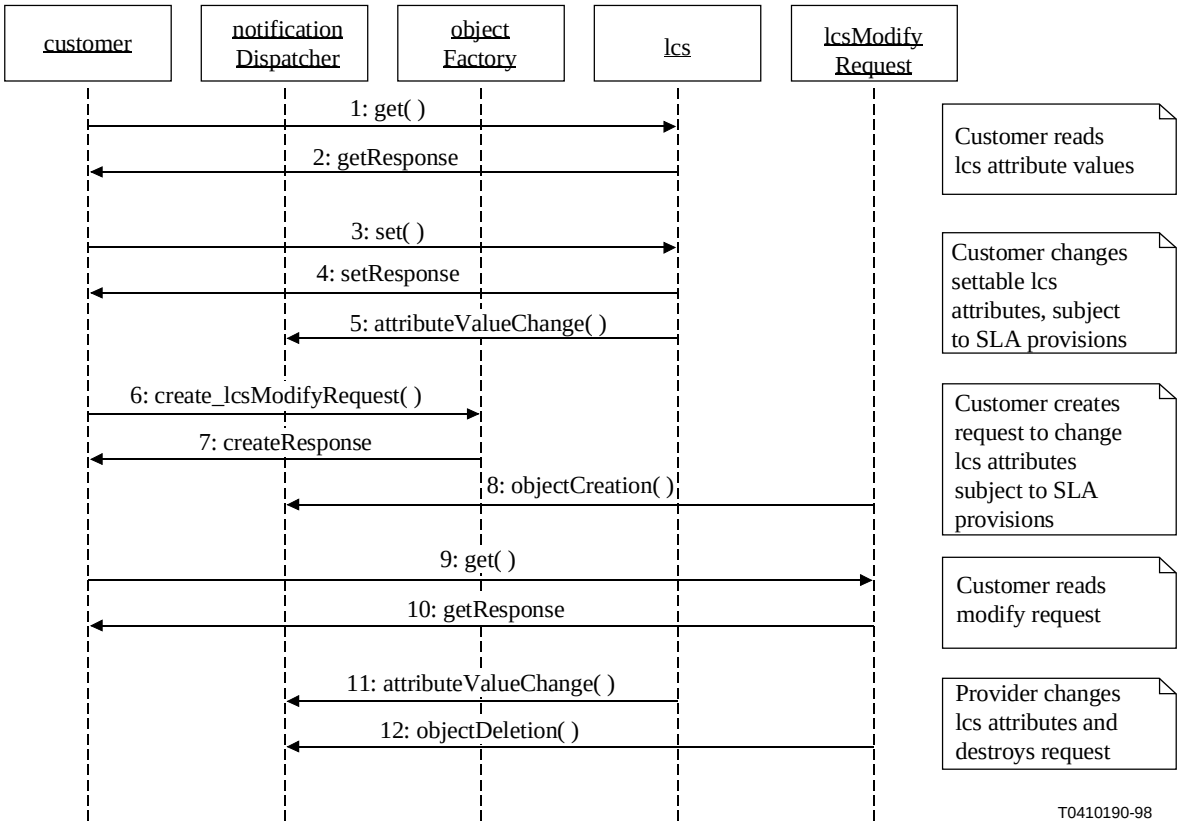


Figure III.13/M.3108.1 – Sequence diagram for modification of existing LCS

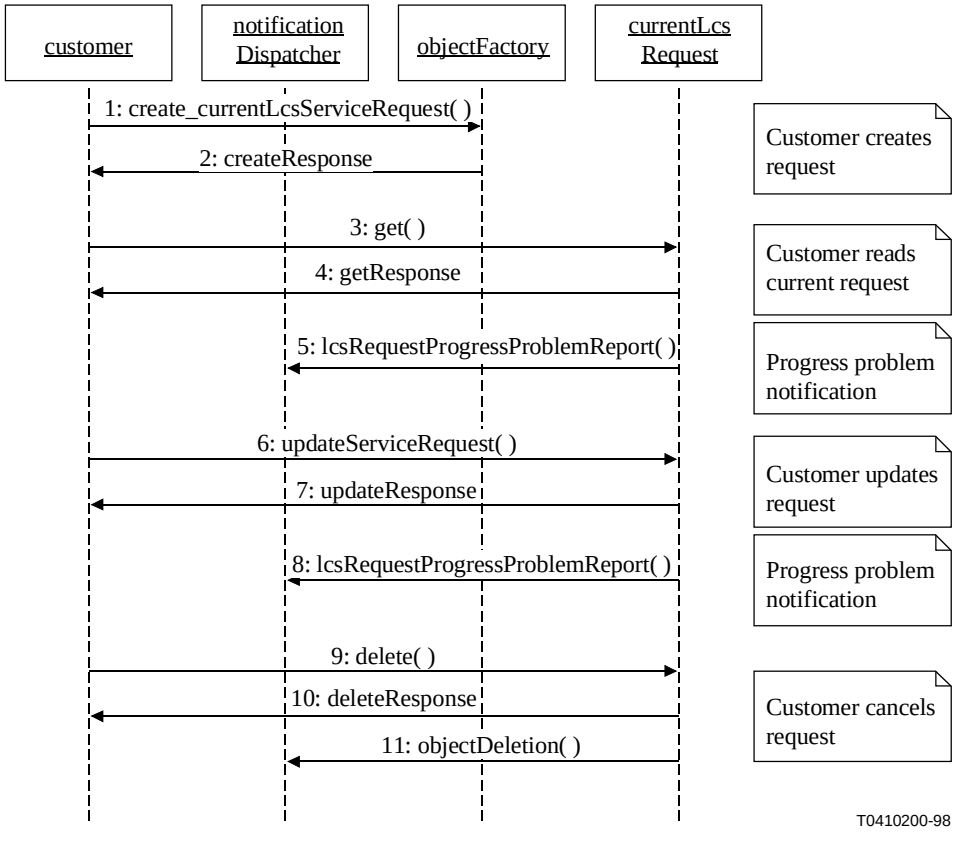


Figure III.14/M.3108.1 – Sequence diagram for unsuccessful LCS instantiation using request without history

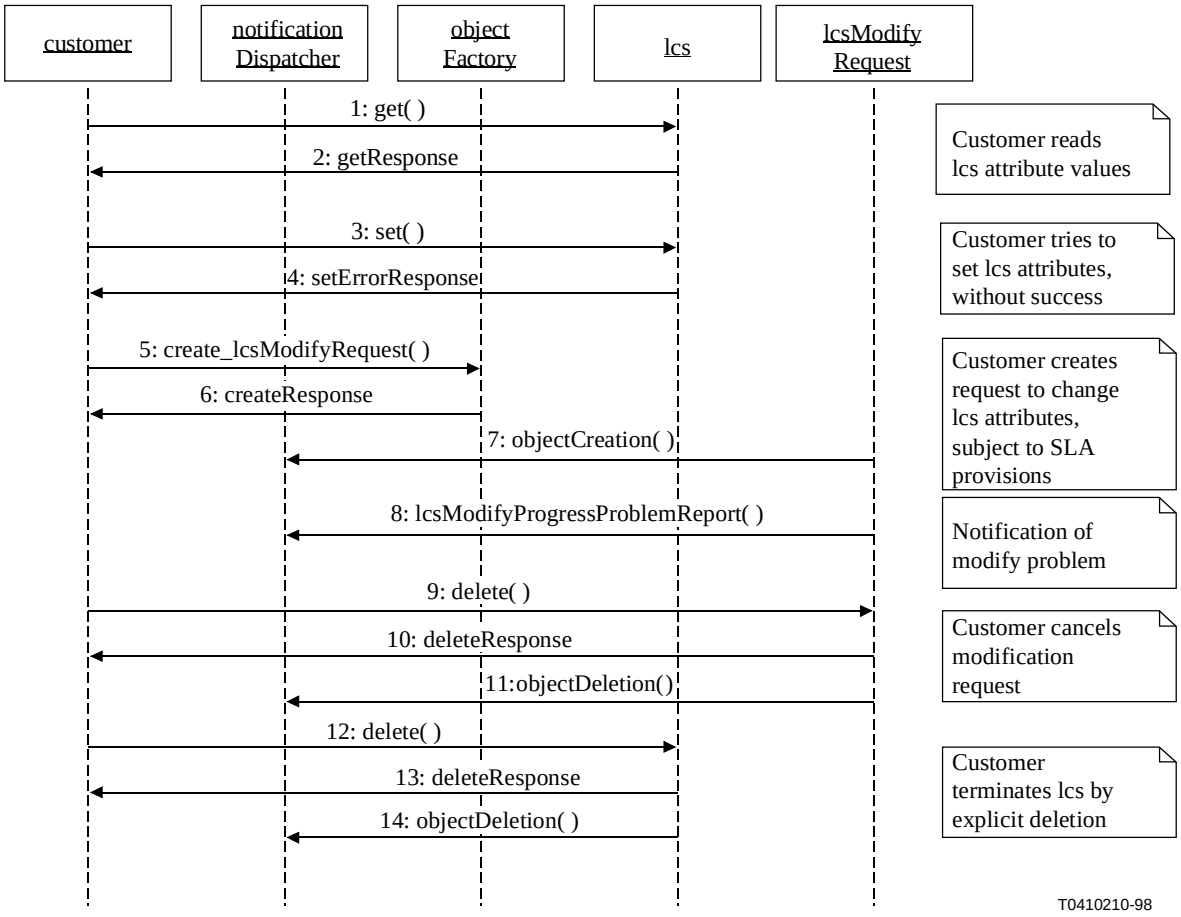


Figure III.15/M.3108.1 – Sequence diagram for unsuccessful LCS modification followed by LCS deletion

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