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OF ITU

X.780.1

Amendment 1
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SERIES X: DATA NETWORKS AND OPEN SYSTEM COMMUNICATIONS

OSI management – Management functions and ODMA functions

TMN guidelines for defining coarse-grained CORBA managed object interfaces

Amendment 1: System façades and user guide for bulk attribute retrieval

ITU-T Recommendation X.780.1 (2001) – Amendment 1

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ITU-T Recommendation X.780.1

TMN guidelines for defining coarse-grained CORBA managed object interfaces

Amendment 1
System façades and user guide for bulk attribute retrieval

Summary

The purpose of this amendment to ITU-T Rec. X.780.1 (2001) is to add the definition of the System and Subsystem managed object façades, and to add a non-normative appendix containing a user guide.

Source

Amendment 1 to ITU-T Recommendation X.780.1 (2001) was prepared by ITU-T Study Group 4 (2001-2004) and approved under the WTSA Resolution 1 procedure on 29 May 2002.

FOREWORD

The International Telecommunication Union (ITU) is the United Nations specialized agency in the field of telecommunications. The ITU Telecommunication Standardization Sector (ITU-T) is a permanent organ of ITU. ITU-T is responsible for studying technical, operating and tariff questions and issuing Recommendations on them with a view to standardizing telecommunications on a worldwide basis.

The World Telecommunication Standardization Assembly (WTSA), which meets every four years, establishes the topics for study by the ITU-T study groups which, in turn, produce Recommendations on these topics.

The approval of ITU-T Recommendations is covered by the procedure laid down in WTSA Resolution 1.

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

In this Recommendation, the expression "Administration" is used for conciseness to indicate both a telecommunication administration and a recognized operating agency.

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As of the date of approval of this Recommendation, 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

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TMN guidelines for defining coarse-grained CORBA managed object interfaces

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1) Annex A

Add the following to the IDL in Annex A:

After the ManagedObject_F *interface definition, which ends with this line:*

```
}; // end of ManagedObject_F interface
```

Add the following lines:

// SYSTEM FACADE

```
interface System_F : ManagedObject_F
{
	/**
	Operational State, Usage State and Administrative State are described in
	Recommendation X.731
	*/

	OperationalStateType operationalStateGet
		(in MONameType name)
		raises (ApplicationError);

	UsageStateType usageStateGet
		(in MONameType name)
		raises (ApplicationError);

	/**
	PRESENT IF an instance supports it.
	*/

	AdministrativeStateType administrativeStateGet
		(in MONameType name)
		raises (ApplicationError,
			NOadministrativeStatePackage);

	void administrativeStateSet
		(in MONameType name,
		in AdministrativeStateType administrativeState)
		raises (ApplicationError,
			NOadministrativeStatePackage);

	CONDITIONAL_NOTIFICATION(
		Notifications, objectCreation,
		createDeleteNotificationsPackage)

	CONDITIONAL_NOTIFICATION(
		Notifications, objectDeletion,
		createDeleteNotificationsPackage)

	CONDITIONAL_NOTIFICATION(
		Notifications, stateChange,
		stateChangeNotificationPackage)

}; // interface System_F
```

// SUBSYSTEM FACADE

```
interface Subsystem_F : System_F
{

}; // interface Subsystem_F
```

2) New Appendix I

Add the following new non-normative appendix:

Appendix I

User guide for bulk attribute retrieval

This appendix provides additional information about the TMN CORBA framework intended to help those implementing systems that conform to the framework Recommendations.

The top-most managed object facade, *ManagedObject_F*, defines two operations that enable a managing system to retrieve multiple attributes from managed objects in one operation. The first, *attributesGet*, retrieves attributes from a single managed object. The second, *attributesBulkGet*, can be used to retrieve multiple attributes from multiple managed objects of the same type. The signatures of these operations are shown below:

```
ManagedObjectValueType attributesGet (
        in      NameType name,
        inout   StringSetType attributeNames)
        raises (ApplicationError);


boolean attributesBulkGet (
        in      NameSetType                     names,
        in      StringSetType                   attributeNames,
        in      unsigned short                  howMany,
        out     AttributesGetResultSet          attributes,
        out     AttributesGetResultIterator     iterator)
        raises (ApplicationError);
```

Note that in the first operation, *attributesGet*, the names of the attributes requested by the managing system are submitted in the *attributeNames* parameter, and the names of the attributes actually returned by the managed object are also returned in the *attributeNames* parameter. Because the list of attributes returned by the managed object may differ from the requested list, the in/out parameter *attributeNames* may be changed by the managed object. Managing system implementations that wish to repeatedly use the same list of attributes will not want that list modified by the managed object. One solution to this problem is made possible by the way in which CORBA ORBs exchange messages to remotely invoke methods on objects and return results. Operation parameters are passed by order, not by name. Thus, a single *inout* parameter can be replaced with separate in and out parameters without impacting the inter-operability of systems. This is because the *in* parameter will take the same place in the invocation message as would the *inout* parameter, and the *out* parameter will take the same place in the results message as would the *inout* parameter. As long as the order of the parameters is not changed, the ORBs will correctly match the parameters in the messages to the parameters on the method invocations. So, the developer of an implementation using the *ManagedObject_F* interface may modify the IDL by replacing the *attributesGet* signature above with the signature below.

```
ManagedObjectValueType attributesGet (
        in      NameType name,
        in      StringSetType requestedAttributeNames,
        out     StringSetType returnedAttributeNames)
        raises (ApplicationError);
```

This will prevent the client system's list of requested attribute names from being overwritten and still be interoperable with managed object facade implementations using the first operation signature, above.

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