

ICS 33.040

M 15



中华人民共和国通信行业标准

YD/T 2330.2-2011

统一 IMS 网络管理接口技术要求

第 2 部分：基于 CORBA 技术的信息模型设计

Common IMS network management interface technical specification
—part 2: CORBA based information model design

2011-12-20 发布

2011-12-20 实施

中华人民共和国工业和信息化部 发布

目 次

前 言.....II

1 范围.....1

2 规范性引用文件.....1

3 缩略语.....1

4 配置网络资源模型设计.....1

 4.1 通用配置资源模型的 IDL 定义.....1

 4.2 统一 IMS 网络资源模型的 IDL 定义.....1

5 性能网络资源模型设计.....24

 5.1 性能管理资源模型的 IDL 定义.....24

 5.2 数据类型的 IDL 定义.....34

6 性能管理接口功能相关的文件.....36

 6.1 性能测量数据文件的 Schema 定义<measCollec.xsd>.....36

 6.2 性能测量数据文件的 XML header 定义.....44

附录 A（规范性附录） Schema 文档补充说明.....45

附录 B（资料性附录） 性能管理功能相关 XML 文件示例.....47

参考文献.....50

前 言

YD/T 2330-2011《统一 IMS 网络管理接口技术要求》分为以下 2 个部分：

- 1) 统一 IMS 网络管理接口技术要求 第 1 部分 信息模型
- 2) 统一 IMS 网络管理接口技术要求 第 2 部分 基于 CORBA 技术的信息模型设计

本部分是 YD/T 2330-2011 的第 2 部分。

本部分按照 GB/T 1.1-2009 给出的规则起草。

本部分由中国通信标准化协会提出并归口。

本部分起草单位：北京邮电大学、北京市天元网络技术有限公司。

本部分主要起草人：李文璟、王智立、孟洛明、芮兰兰、高 娴。

统一IMS网络管理接口技术要求
第2部分：基于CORBA技术的信息模型设计

1 范围

本部分规定了统一IMS网络管理接口中的信息模型的IDL定义。
本部分适用于统一IMS网络的网络管理。

2 规范性引用文件

下列文件对于本文件的应用是必不可少的。凡是注日期的引用文件，仅所注日期的版本适用于本文件。凡是不注日期的引用文件，其最新版本（包括所有的修改单）适用于本文件。

YD/T1586.3-2007 2GHz WCDMA 数字蜂窝移动通信网网络管理技术要求(第一阶段) 第3部分 基于CORBA技术的网络资源模型设计

YD/T 2330.1-2011 统一IMS网络管理接口技术要求 第1部分 信息模型

3 缩略语

下列缩略语适用于本文件。

IDL	接口定义语言	Interface Definition Language
CORBA	公共对象请求代理体系	Common Object Request Broker Architecture

4 配置网络资源模型设计

配置网络资源模型设计中有3类idl文件,这3类文档及其用途如下:

- 1) xxxNRMDefs.idl,包括GenericNRMDefs.idl、IMDataDefs.idl和ImsNRMDefs.idl,用来定义配置网络资源对象及其属性名称;
- 2) xxxNRMSystem.idl,包括GenericNRMSystem.idl和 ImsNRMSystem.idl,用来定义配置网络资源对象的属性使用的数据类型;
- 3) xxxNRMProfile.idl, 包括GenericNRMProfile.idl、IMDataProfile.idl和 ImsNRMProfile.idl,只是用来描述配置网络资源对象的属性名称及其数据类型的对应关系,实现时并不使用此类idl文件。

4.1 通用配置资源模型的 IDL 定义

见YD/T1586.3-2007中4.1给出的定义。

4.2 统一 IMS 网络资源模型的 IDL 定义

4.2.1 ImsNRMSystem

```
#ifndef ImsNRMSystem_idl
#define ImsNRMSystem_idl

#include "GenericNRMSystem.idl"

// #pragma prefix "3gppsa5.org"
```



```

module ImsNRMSystem
{
    /**
     * This module adds datatype definitions for types
     * used in the Ims NRM which are not basic datatypes defined
     * already in CORBA and datatypes defined already in
     * GenericNRMSystem.
     */

    typedef string IPAddress;

    typedef sequence< IPAddress > IPAddressListType;

    struct EthernetPortInfoType
    {
        string ethernetPortId;
        IPAddressListType  ipAddressList;

    };

};

#endif

```

4.2.2 ImsNRMDefs

```

//File "ImsNRMDefs.idl"
//The IRP document version number is "IMS NRM V1.0"
#ifndef ImsNRMDefs_idl
#define ImsNRMDefs_idl

#include "GenericNRMDefs.idl"

#pragma prefix "3gppsa5.org"

/**
 * This module defines constants for each MO class name and

```

```

* the attribute names for each defined MO class.
*/
module ImsNRMDefs
{

    //Definitions for MO class CscfFunction

    interface CscfFunction : GenericNRMDefs::ManagedFunction
    {
        const string CLASS = "CscfFunction";

        // including all Attribute Names from
        // MO Class GenericNRMDefs::ManagedFunction
        // additional Attribute Names is as follows.
        //
        const string sipUri = "sipUri";
        const string homeDN = " homeDN ";
        const string maxBHSA = " maxBHSA ";
    };

    //Definitions for MO class ScscfFunction

    interface ScscfFunction : ImsNRMDefs::CscfFunction
    {
        const string CLASS = "ScscfFunction";

        // including all Attribute Names from
        // MO Class GenericNRMDefs::CscfFunction
        // additional Attribute Names is as follows.
        //
        const string scscfFunctionId = "scscfFunctionId";
        const string ethernetPortInfo = "ethernetPortInfo";
        const string maxNumImpi = " maxNumImpi ";
        const string maxNumImpu = " maxNumImpu ";
    };

    //Definitions for MO class PcscfFunction

```

```

interface PcsfFunction : ImsNRMDefs::CscfFunction
{
    const string CLASS = "PcsfFunction";

    // including all Attribute Names from
    // MO Class GenericNRMDefs::CscfFunction
    // additional Attribute Names is as follows.
    //
    const string pcsfFunctionId = "pcsfFunctionId";
    const string ethernetPortInfo = "ethernetPortInfo";
    const string maxNumImpi = " maxNumImpi ";
    const string maxNumImpu = " maxNumImpu ";

};

//Definitions for MO class IcsfFunction

interface IcsfFunction : ImsNRMDefs::CscfFunction
{
    const string CLASS = "IcsfFunction";

    // including all Attribute Names from
    // MO Class GenericNRMDefs::CscfFunction
    // additional Attribute Names is as follows.
    //
    const string icsfFunctionId = "icsfFunctionId";
};

//Definitions for MO class BgcfFunction

interface BgcfFunction : GenericNRMDefs::ManagedFunction
{
    const string CLASS = "BgcfFunction";

    // including all Attribute Names from
    // MO Class GenericNRMDefs::ManagedFunction

```

```

// additional Attribute Names is as follows.
//
const string bgcfFunctionId = "bgcfFunctionId";
const string sipUri = "sipUri";
const string homeDN = " homeDN ";
const string maxBHSA = " maxBHSA ";
const string ethernetPortInfo = "ethernetPortInfo";
};

//Definitions for MO class MrfcFunction

interface MrfcFunction : GenericNRMDefs::ManagedFunction
{
    const string CLASS = "MrfcFunction";

    // including all Attribute Names from
    // MO Class GenericNRMDefs::ManagedFunction
    // additional Attribute Names is as follows.
    //
    const string mrfcFunctionId = "mrfcFunctionId";
    const string sipUri = "sipUri";
    const string homeDN = " homeDN ";
    const string maxBHSA = " maxBHSA ";
    const string mrfpList = " mrfpList ";
    const string ethernetPortInfo = "ethernetPortInfo";
    const string maxNumUser = " maxNumUser ";
};

//Definitions for MO class MrfpFunction

interface MrfpFunction : GenericNRMDefs::ManagedFunction
{
    const string CLASS = "MrfpFunction";

    // including all Attribute Names from
    // MO Class GenericNRMDefs::ManagedFunction
    // additional Attribute Names is as follows.

```

```

//
const string mrfpFunctionId = "mrfpFunctionId";
const string homeDN = " homeDN ";
const string ethernetPortInfo = "ethernetPortInfo";
};

//Definitions for MO class MgcFunction

interface MgcFunction : GenericNRMDefs::ManagedFunction
{
    const string CLASS = "MgcFunction";

    // including all Attribute Names from
    // MO Class GenericNRMDefs::ManagedFunction
    // additional Attribute Names is as follows.
    //
    const string mgcfFunctionId = "mgcfFunctionId";
    const string homeDN = " homeDN ";
    const string maxBHSA = " maxBHSA ";
    const string mgwList = " mgwList ";
    const string ethernetPortInfo = "ethernetPortInfo";
};

//Definitions for MO class ImsMgwFunction

interface ImsMgwFunction : GenericNRMDefs::ManagedFunction
{
    const string CLASS = "ImsMgwFunction";

    // including all Attribute Names from
    // MO Class GenericNRMDefs::ManagedFunction
    // additional Attribute Names is as follows.
    //
    const string imsMgwFunctionId = "imsMgwFunctionId";
    const string ethernetPortInfo = "ethernetPortInfo";
};

```

//Definitions for MO class HssFunction

```
interface HssFunction : GenericNRMDefs::ManagedFunction
{
    const string CLASS = "HssFunction";

    // including all Attribute Names from
    // MO Class GenericNRMDefs::ManagedFunction
    // additional Attribute Names is as follows.
    //
    const string hssFunctionId = "hssFunctionId";
    const string homeDN = " homeDN ";
};
```

//Definitions for MO class SlfFunction

```
interface SlfFunction : GenericNRMDefs::ManagedFunction
{
    const string CLASS = "SlfFunction";

    // including all Attribute Names from
    // MO Class GenericNRMDefs::ManagedFunction
    // additional Attribute Names is as follows.
    //
    const string slfFunctionId = "slfFunctionId";
    const string homeDN = " homeDN ";
    const string hssList = " hssList ";

};
```

//Definitions for MO class IbcfFunction

```
interface IbcfFunction : GenericNRMDefs::ManagedFunction
{
    const string CLASS = "IbcfFunction";

    // including all Attribute Names from
```



```

// MO Class GenericNRMDefs::ManagedFunction
// additional Attribute Names is as follows.
//
const string ibcfFunctionId = "ibcfFunctionId";
const string homeDN = " homeDN ";
};

//Definitions for MO class EP_RP

interface EP_RP : GenericNRMDefs::Top
{
    const string CLASS = " EP_RP ";

    // including all Attribute Names from
    // MO Class GenericNRMDefs::Top
    // additional Attribute Names is as follows.
    //
    const string id = "id";
    const string userLabel = " userLabel ";
    const string farEndEntity = " farEndEntity ";
};

//Definitions for MO class EP_Mp_Mrfp

interface EP_Mp_Mrfp : ImsNRMDefs:: EP_RP
{
    const string CLASS = " EP_Mp_Mrfp ";

    // including all Attribute Names from
    // MO Class ImsNRMDefs:: EP_RP
    // additional Attribute Names is as follows.
    //
    const string farEndNeIpAddrList = " farEndNeIpAddrList ";
};

```

//Definitions for MO class EP_Mp_Mrhc

```
interface EP_Mp_Mrhc : ImsNRMDefs:: EP_RP
{
    const string CLASS = " EP_Mp_Mrhc ";

    // including all Attribute Names from
    // MO Class ImsNRMDefs:: EP_RP
    // additional Attribute Names is as follows.
    //
    const string farEndNeIpAddrList = " farEndNeIpAddrList ";
};
```

//Definitions for MO class EP_Mb_Mrhp

```
interface EP_Mb_Mrhp : ImsNRMDefs:: EP_RP
{
    const string CLASS = " EP_Mb_Mrhp ";

    // including all Attribute Names from
    // MO Class ImsNRMDefs:: EP_RP
    // additional Attribute Names is as follows.
    //
    const string farEndNeIpAddrList = " farEndNeIpAddrList ";
};
```

//Definitions for MO class EP_Mb_ImsMgw

```
interface EP_Mb_ImsMgw : ImsNRMDefs:: EP_RP
{
    const string CLASS = " EP_Mb_ImsMgw ";

    // including all Attribute Names from
    // MO Class ImsNRMDefs:: EP_RP
    // additional Attribute Names is as follows.
    //
```

```

    const string farEndNeIpAddrList = " farEndNeIpAddrList ";
};

//Definitions for MO class EP_Mn_Mgcf

interface EP_Mn_Mgcf : ImsNRMDefs:: EP_RP
{
    const string CLASS = " EP_Mn_Mgcf ";

    // including all Attribute Names from
    // MO Class ImsNRMDefs:: EP_RP
    // additional Attribute Names is as follows.
    //
    const string farEndNeIpAddrList = " farEndNeIpAddrList ";
};

//Definitions for MO class EP_Mn_ImsMgw

interface EP_Mn_ImsMgw : ImsNRMDefs:: EP_RP
{
    const string CLASS = " EP_Mn_ImsMgw ";

    // including all Attribute Names from
    // MO Class ImsNRMDefs:: EP_RP
    // additional Attribute Names is as follows.
    //
    const string farEndNeIpAddrList = " farEndNeIpAddrList ";
};

//Definitions for MO class EP_Cx_Hss

interface EP_CX_Hss : ImsNRMDefs:: EP_RP
{
    const string CLASS = " EP_Cx_Hss ";

    // including all Attribute Names from
    // MO Class ImsNRMDefs:: EP_RP

```

```

// additional Attribute Names is as follows.
//
const string farEndNeIpAddrList = " farEndNeIpAddrList ";
};

//Definitions for MO class EP_Cx_Cscf

interface EP_Cx_Cscf : ImsNRMDefs:: EP_RP
{
    const string CLASS = " EP_Cx_Cscf ";

    // including all Attribute Names from
    // MO Class ImsNRMDefs:: EP_RP
    // additional Attribute Names is as follows.
    //
    const string farEndNeIpAddrList = " farEndNeIpAddrList ";
};

//Definitions for MO class EP_Dx_Cscf

interface EP_Dx_Cscf : ImsNRMDefs:: EP_RP
{
    const string CLASS = " EP_Dx_Cscf ";

    // including all Attribute Names from
    // MO Class ImsNRMDefs:: EP_RP
    // additional Attribute Names is as follows.
    //
    const string farEndNeIpAddrList = " farEndNeIpAddrList ";
};

//Definitions for MO class EP_Dx_Slf

interface EP_Dx_Slf : ImsNRMDefs:: EP_RP
{
    const string CLASS = " EP_Dx_Slf ";
};

```

```

        // including all Attribute Names from
        // MO Class ImsNRMDefs:: EP_RP
        // additional Attribute Names is as follows.
        //
        const string farEndNeIpAddrList = " farEndNeIpAddrList ";
    };

#endif

```

4.2.3 ImsNRMPProfile

```

//File "ImsNRMPProfile.idl"
//The IRP document version number is "IMS NRM V1.0"
#ifndef ImsNRMPProfile_idl
#define ImsNRMPProfile_idl

#include "GenericNRMPProfile.idl"
#include "GenericNRMDefs.idl"
#include "ImsNRMSystem.idl"

/**
 * This module defines the attribute names and
 * correspondig attribute types for all defined
 * MO class in Ims network. This module is
 * used for reference.
 */
module ImsNRMPProfile
{
    interface CscfFunction : GenericNRMPProfile::ManagedFunction
    {
        readonly attribute string sipUri;
        readonly attribute GenericNRMSystem::DN homeDN;
        readonly attribute unsigned long maxBHSA;

        // The following notifications may be sent from this MO,
        // notifyObjectCreation
    }
}

```

```

        // notifyObjectDeletion
        // notifyAttributeValueChange
        // notifyAckStateChanged
        // notifyChangedAlarm
        // notifyClearedAlarm
        // notifyNewAlarm
        // notifyComments
        // notifyAlarmListRebuilt
        // notifyPotentialFaultyAlarmList
    };

interface ScscfFunction : ImsNRMPProfile::CscfFunction
{
    readonly attribute GenericNRMSystem::ObjectIdType scscfFunctionId;
    readonly attribute ImsNRMSystem:: EthernetPortInfoType ethernetPortInfo;
    readonly attribute unsigned long maxNumImpi;
    readonly attribute unsigned long maxNumImpu;

    // The following notifications may be sent from this MO,
        // notifyObjectCreation
        // notifyObjectDeletion
        // notifyAttributeValueChange
        // notifyAckStateChanged
        // notifyChangedAlarm
        // notifyClearedAlarm
        // notifyNewAlarm
        // notifyComments
        // notifyAlarmListRebuilt
        // notifyPotentialFaultyAlarmList
};

interface PscfFunction : ImsNRMPProfile::CscfFunction
{
    readonly attribute GenericNRMSystem::ObjectIdType pscfFunctionId;
    readonly attribute ImsNRMSystem:: EthernetPortInfoType ethernetPortInfo;
    readonly attribute unsigned long maxNumImpi;
    readonly attribute unsigned long maxNumImpu;

```



```

// The following notifications may be sent from this MO,
// notifyObjectCreation
// notifyObjectDeletion
// notifyAttributeValueChange
// notifyAckStateChanged
// notifyChangedAlarm
// notifyClearedAlarm
// notifyNewAlarm
// notifyComments
// notifyAlarmListRebuilt
// notifyPotentialFaultyAlarmList
};

interface IcsfFunction : ImsNRMPProfile::CscfFunction
{
    readonly attribute GenericNRMSystem::ObjectIdType icscfFunctionId;

    // The following notifications may be sent from this MO,
    // notifyObjectCreation
    // notifyObjectDeletion
    // notifyAttributeValueChange
    // notifyAckStateChanged
    // notifyChangedAlarm
    // notifyClearedAlarm
    // notifyNewAlarm
    // notifyComments
    // notifyAlarmListRebuilt
    // notifyPotentialFaultyAlarmList
};

interface BgcFunction : GenericNRMPProfile::ManagedFunction
{
    readonly attribute GenericNRMSystem::ObjectIdType bgcfFunctionId;
    readonly attribute string sipUri;
    readonly attribute GenericNRMSystem::DN homeDN;
    readonly attribute unsigned long maxBHSA;

```

```

    readonly attribute ImsNRMSys:: EthernetPortInfoType ethernetPortInfo;

    // The following notifications may be sent from this MO,
    // notifyObjectCreation
    // notifyObjectDeletion
    // notifyAttributeValueChange
    // notifyAckStateChanged
    // notifyChangedAlarm
    // notifyClearedAlarm
    // notifyNewAlarm
    // notifyComments
    // notifyAlarmListRebuilt
    // notifyPotentialFaultyAlarmList
};

interface MrfcFunction : GenericNRMP::ManagedFunction
{
    readonly attribute GenericNRMSys::ObjectIdType mrfcFunctionId;
    readonly attribute string sipUri;
    readonly attribute GenericNRMSys::DN homeDN;
    readonly attribute GenericNRMSys::DNListType mrfpList;
    readonly attribute unsigned long maxBHSA;
    readonly attribute ImsNRMSys:: EthernetPortInfoType ethernetPortInfo;
    readonly attribute unsigned long maxNumUser;

    // The following notifications may be sent from this MO,
    // notifyObjectCreation
    // notifyObjectDeletion
    // notifyAttributeValueChange
    // notifyAckStateChanged
    // notifyChangedAlarm
    // notifyClearedAlarm
    // notifyNewAlarm
    // notifyComments
    // notifyAlarmListRebuilt
    // notifyPotentialFaultyAlarmList
};

```

```

interface MrfpFunction : GenericNRMPProfile::ManagedFunction
{
    readonly attribute GenericNRMSystem::ObjectIdType mrfpFunctionId;
    readonly attribute GenericNRMSystem::DN homeDN;
    readonly attribute ImsNRMSystem:: EthernetPortInfoType ethernetPortInfo;

    // The following notifications may be sent from this MO,
    // notifyObjectCreation
    // notifyObjectDeletion
    // notifyAttributeValueChange
    // notifyAckStateChanged
    // notifyChangedAlarm
    // notifyClearedAlarm
    // notifyNewAlarm
    // notifyComments
    // notifyAlarmListRebuilt
    // notifyPotentialFaultyAlarmList
};

```

```

interface MgcffFunction : GenericNRMPProfile::ManagedFunction
{
    readonly attribute GenericNRMSystem::ObjectIdType mgcffFunctionId;
    readonly attribute GenericNRMSystem::DN homeDN;
    readonly attribute GenericNRMSystem::DNListType mgwList;
    readonly attribute unsigned long maxBHSA;
    readonly attribute ImsNRMSystem:: EthernetPortInfoType ethernetPortInfo;

    // The following notifications may be sent from this MO,
    // notifyObjectCreation
    // notifyObjectDeletion
    // notifyAttributeValueChange
    // notifyAckStateChanged
    // notifyChangedAlarm
    // notifyClearedAlarm
    // notifyNewAlarm
    // notifyComments

```

```

        // notifyAlarmListRebuilt
        // notifyPotentialFaultyAlarmList
    };

interface ImsmgwFunction : GenericNRMPProfile::ManagedFunction
{
    readonly attribute GenericNRMSystem::ObjectIdType imsmgwFunctionId;
    readonly attribute ImsNRMSystem:: EthernetPortInfoType ethernetPortInfo;

    // The following notifications may be sent from this MO,
    // notifyObjectCreation
    // notifyObjectDeletion
    // notifyAttributeValueChange
    // notifyAckStateChanged
    // notifyChangedAlarm
    // notifyClearedAlarm
    // notifyNewAlarm
    // notifyComments
    // notifyAlarmListRebuilt
    // notifyPotentialFaultyAlarmList
};

interface HssFunction : GenericNRMPProfile::ManagedFunction
{
    readonly attribute GenericNRMSystem::ObjectIdType hssFunctionId;
    readonly attribute GenericNRMSystem::DN homeDN;

    // The following notifications may be sent from this MO,
    // notifyObjectCreation
    // notifyObjectDeletion
    // notifyAttributeValueChange
    // notifyAckStateChanged
    // notifyChangedAlarm
    // notifyClearedAlarm
    // notifyNewAlarm
    // notifyComments
    // notifyAlarmListRebuilt

```

```

        // notifyPotentialFaultyAlarmList
    };

interface SlfFunction : GenericNRMPProfile::ManagedFunction
{
    readonly attribute GenericNRMSystem::ObjectIdType slfFunctionId;
    readonly attribute GenericNRMSystem::DN homeDN;
    readonly attribute GenericNRMSystem::DNListType hssList;

    // The following notifications may be sent from this MO,
    // notifyObjectCreation
    // notifyObjectDeletion
    // notifyAttributeValueChange
    // notifyAckStateChanged
    // notifyChangedAlarm
    // notifyClearedAlarm
    // notifyNewAlarm
    // notifyComments
    // notifyAlarmListRebuilt
    // notifyPotentialFaultyAlarmList
};

interface IbcfFunction : GenericNRMPProfile::ManagedFunction
{
    readonly attribute GenericNRMSystem::ObjectIdType ibcfFunctionId;
    readonly attribute GenericNRMSystem::DN homeDN;

    // The following notifications may be sent from this MO,
    // notifyObjectCreation
    // notifyObjectDeletion
    // notifyAttributeValueChange
    // notifyAckStateChanged
    // notifyChangedAlarm
    // notifyClearedAlarm
    // notifyNewAlarm
    // notifyComments
    // notifyAlarmListRebuilt

```

```

        // notifyPotentialFaultyAlarmList
    };

interface EP_RP : GenericNRMPProfile::Top
{
    readonly attribute GenericNRMSystem::ObjectIdType id;
    readonly attribute string userLabel;
    readonly attribute GenericNRMSystem::DN farEndEntity;

    // The following notifications may be sent from this MO,
    // notifyObjectCreation
    // notifyObjectDeletion
    // notifyAttributeValueChange
    // notifyAckStateChanged
    // notifyChangedAlarm
    // notifyClearedAlarm
    // notifyNewAlarm
    // notifyComments
    // notifyAlarmListRebuilt
    // notifyPotentialFaultyAlarmList
};

interface EP_Mp_Mrfp : ImsNRMPProfile::EP_RP
{
    attribute ImsNRMSystem:: IPAddressListType farEndNeIpAddrList;

    // The following notifications may be sent from this MO,
    // notifyObjectCreation
    // notifyObjectDeletion
    // notifyAttributeValueChange
    // notifyAckStateChanged
    // notifyChangedAlarm
    // notifyClearedAlarm
    // notifyNewAlarm
    // notifyComments
    // notifyAlarmListRebuilt
    // notifyPotentialFaultyAlarmList

```



```

};

interface EP_Mp_Mrhc : ImsNRMPProfile::EP_RP
{
    attribute ImsNRMSysstem:: IPAddressListType farEndNeIpAddrList;

    // The following notifications may be sent from this MO,
    // notifyObjectCreation
    // notifyObjectDeletion
    // notifyAttributeValueChange
    // notifyAckStateChanged
    // notifyChangedAlarm
    // notifyClearedAlarm
    // notifyNewAlarm
    // notifyComments
    // notifyAlarmListRebuilt
    // notifyPotentialFaultyAlarmList
};

interface EP_Mb_Mrhc : ImsNRMPProfile::EP_RP
{
    attribute ImsNRMSysstem:: IPAddressListType farEndNeIpAddrList;

    // The following notifications may be sent from this MO,
    // notifyObjectCreation
    // notifyObjectDeletion
    // notifyAttributeValueChange
    // notifyAckStateChanged
    // notifyChangedAlarm
    // notifyClearedAlarm
    // notifyNewAlarm
    // notifyComments
    // notifyAlarmListRebuilt
    // notifyPotentialFaultyAlarmList
};

interface EP_Mb_Imsmgw : ImsNRMPProfile::EP_RP

```

```

{
    attribute ImsNRMSystem:: IPAddressListType farEndNeIpAddrList;

    // The following notifications may be sent from this MO,
    // notifyObjectCreation
    // notifyObjectDeletion
    // notifyAttributeValueChange
    // notifyAckStateChanged
    // notifyChangedAlarm
    // notifyClearedAlarm
    // notifyNewAlarm
    // notifyComments
    // notifyAlarmListRebuilt
    // notifyPotentialFaultyAlarmList
};

interface EP_Mn_Mgcf : ImsNRMProfile::EP_RP
{
    attribute ImsNRMSystem:: IPAddressListType farEndNeIpAddrList;

    // The following notifications may be sent from this MO,
    // notifyObjectCreation
    // notifyObjectDeletion
    // notifyAttributeValueChange
    // notifyAckStateChanged
    // notifyChangedAlarm
    // notifyClearedAlarm
    // notifyNewAlarm
    // notifyComments
    // notifyAlarmListRebuilt
    // notifyPotentialFaultyAlarmList
};

interface EP_Mn_Imsmgw : ImsNRMProfile::EP_RP
{
    attribute ImsNRMSystem:: IPAddressListType farEndNeIpAddrList;

```

```

        // The following notifications may be sent from this MO,
        // notifyObjectCreation
        // notifyObjectDeletion
        // notifyAttributeValueChange
        // notifyAckStateChanged
        // notifyChangedAlarm
        // notifyClearedAlarm
        // notifyNewAlarm
        // notifyComments
        // notifyAlarmListRebuilt
        // notifyPotentialFaultyAlarmList
    };

interface EP_Cx_Hss: ImsNRMPProfile::EP_RP
{
    attribute ImsNRMSystem:: IPAddressListType farEndNeIpAddrList;

    // The following notifications may be sent from this MO,
    // notifyObjectCreation
    // notifyObjectDeletion
    // notifyAttributeValueChange
    // notifyAckStateChanged
    // notifyChangedAlarm
    // notifyClearedAlarm
    // notifyNewAlarm
    // notifyComments
    // notifyAlarmListRebuilt
    // notifyPotentialFaultyAlarmList
};

interface EP_Cx_Cscf : ImsNRMPProfile::EP_RP
{
    attribute ImsNRMSystem:: IPAddressListType farEndNeIpAddrList;

    // The following notifications may be sent from this MO,
    // notifyObjectCreation
    // notifyObjectDeletion

```

```

        // notifyAttributeValueChange
        // notifyAckStateChanged
        // notifyChangedAlarm
        // notifyClearedAlarm
        // notifyNewAlarm
        // notifyComments
        // notifyAlarmListRebuilt
        // notifyPotentialFaultyAlarmList
    };

interface EP_Dx_Cscf : ImsNRMPProfile::EP_RP
{
    attribute ImsNRMSystem:: IPAddressListType farEndNeIpAddrList;

    // The following notifications may be sent from this MO,
    // notifyObjectCreation
    // notifyObjectDeletion
    // notifyAttributeValueChange
    // notifyAckStateChanged
    // notifyChangedAlarm
    // notifyClearedAlarm
    // notifyNewAlarm
    // notifyComments
    // notifyAlarmListRebuilt
    // notifyPotentialFaultyAlarmList
};

interface EP_Dx_Slf : ImsNRMPProfile::EP_RP
{
    attribute ImsNRMSystem:: IPAddressListType farEndNeIpAddrList;

    // The following notifications may be sent from this MO,
    // notifyObjectCreation
    // notifyObjectDeletion
    // notifyAttributeValueChange
    // notifyAckStateChanged
    // notifyChangedAlarm

```

```
        // notifyClearedAlarm
        // notifyNewAlarm
        // notifyComments
        // notifyAlarmListRebuilt
        // notifyPotentialFaultyAlarmList
    };

};

#endif
```

5 性能网络资源模型设计

5.1 性能管理资源模型的 IDL 定义

注：下面的 IDL 文件为每个 family 定义了一个独立的 module。

- "family.measurementName.subcounter" 可用于获取一个 MeasurementType 的某个 subcounter 值；
- "family.measurementName" 可用于获取一个 MeasurementType 的值。如果该 MeasurementType 有 subcounters，那么所有 subcounters 的值都应该返回；
- "family" 可用于获取该 family 下的所有 MeasurementType 的值。

其中，family 为 YD/T 2330.1 第 5 章性能参数中的英文表名；subcounter 设置时选相应的整数值（取值见下节数据类型的 IDL 定义“IMSNRMMeasurementSystem.idl”中的定义）。

例如，

- (1) "CSCFREG.FailReg._Cause.5" 可用于获取某个 cause (NotAccepted) 的 "FailReg._Cause" 的值；
- (2) "CSCFREG.FailReg._Cause" 可用于获取 "FailReg._Cause" 的所有 subcounters 的值；
- (3) "CSCFREG.AttReg" 可用于获取 "AttReg" 的值；
- (4) "CSCFREG" 可用于获取该 family 下的所有 MeasurementType 的值。

```
//File IMSNRMMMeasurementDefs.idl
#ifndef IMSNRMMMeasurementDefs_idl
#define IMSNRMMMeasurementDefs_idl

// #pragma prefix "3gppsa5.org"

/**
 * This module defines measurementType names constants
 */

module IMSNRMMMeasurementDefs
{
    // cscf measurement
```



```

module CSCFREG
{
    //registration
    const string AttReg = " AttReg ";
    const string SuccReg = " SuccReg ";
    const string FailRegSum = " FailReg.Sum ";
    const string FailReg_Cause = " FailReg._Cause ";
    const string MeanSetupDur = " MeanSetupDur ";
    //re-registration
    const string AttReReg = " AttReReg ";
    const string SuccReReg = " SuccReReg ";
    const string FailReRegSum = " FailReReg.Sum ";
    const string FailReReg_Cause = " FailReReg._Cause ";
    // third party registration
    const string Att3rdPartyReg = " Att3rdParty Reg ";
    const string Succ3rdPartyReg = " Succ3rdParty Reg ";
    const string Fail3rdPartyRegSum = " Fail3rdParty Reg.Sum ";
    const string Fail3rdPartyReg_Cause = " Fail3rdParty Reg._Cause ";
    // ue registration status and registration/deregistration notification query via hss
    const string AttUsrRegStatQry = " AttUsrRegStatQry ";
    const string SuccUsrRegStatQry = " SuccUsrRegStatQry ";
    const string FailUsrRegStatQrySum = " FailUsrRegStatQry.Sum ";
    const string FailUsrRegStatQry_Cause = " FailUsrRegStatQry._Cause ";
    const string AttRegNotif = " AttRegNotif ";
    const string SuccRegNotif = " SuccRegNotif ";
    const string FailSRegNotifSum = " FailSRegNotif. Sum ";
    const string FailSRegNotif_Cause = " FailSRegNotif._Cause ";
};

```

```

module CSCFSESS

```

```

{
    // session control related measurements
    const string AttSessEstab = " AttSessEstab ";
    const string SuccSessEstab = " SuccSessEstab ";
    const string AnsSessEstab = " AnsSessEstab ";
    const string FailSessEstabSum = " FailSessEstab.Sum ";
    const string FailSessEstab_Cause = " FailSessEstab._Cause ";

```



```

const string MaxSimuAnsSess = " MaxSimuAnsSess ";
const string SuccSessMeanEstab = " SuccSessMeanEstab ";
const string SuccRespTraffic = " SuccRespTraffic ";

};

module CSCFUSRLOC
{
    // user location query related measurements
    const string AttUsrLocQry = " AttUsrLocQry ";
    const string SuccUsrLocQry = " SuccUsrLocQry ";
    const string FailUsrLocQrySum = " FailUsrLocQry.Sum ";
    const string FailUsrLocQry_Cause = " FailUsrLocQry._Cause ";
};

module CSCFSESSINTERSP
{
    // inter-network domain calling related measurements
    const string AttSessEstabToOtherSpSum = " AttSessEstabToOtherSp.Sum ";
    const string AttSessEstabToOtherSp_Domain = " AttSessEstabToOtherSp._Domain ";
    const string SuccSessEstabToOtherSpSum = " SuccSessEstabToOtherSp.Sum ";
    const string SuccSessEstabToOtherSp_Domain = " SuccSessEstabToOtherSp._Domain ";
    const string AnsSessEstabToOtherSpSum = " AnsSessEstabToOtherSp.Sum ";
    const string AnsSessEstabToOtherSp_Domain = " AnsSessEstabToOtherSp._Domain ";
    const string ForbSessEstabToOtherSpSum = " ForbSessEstabToOtherSp.Sum ";
    const string ForbSessEstabToOtherSp_Domain = " ForbSessEstabToOtherSp._Domain ";
    const string AttSessEstabFromOtherSpSum = " AttSessEstabFromOtherSp.Sum ";
    const string AttSessEstabFromOtherSp_Domain = " AttSessEstabFromOtherSp._Domain ";
    const string SuccSessEstabFromOtherSpSum = " SuccSessEstabFromOtherSp.Sum ";
    const string SuccSessEstabFromOtherSp_Domain = " SuccSessEstabFromOtherSp._Domain ";
    const string AnsSessEstabFromOtherSpSum = " AnsSessEstabFromOtherSp.Sum ";
    const string AnsSessEstabFromOtherSp_Domain = " AnsSessEstabFromOtherSp._Domain ";
    const string ForbSessEstabFromOtherSpSum = " ForbSessEstabFromOtherSp.Sum ";
    const string ForbSessEstabFromOtherSp_Domain = " ForbSessEstabFromOtherSp._Domain ";
};

module CSCFROAMER
{

```

```

// roaming users related measurements
const string IniRegFromOtherSpSum = " IniRegFromOtherSp.Sum ";
const string IniRegFromOtherSp_Domain = " IniRegFromOtherSp._Domain ";
const string NbrForbMesForRoamersSum = " NbrForbMesForRoamers.Sum ";
const string NbrForbMesForRoamers_Domain = " NbrForbMesForRoamers._Domain ";
const string RoamUserToOtherSpSum = " RoamUserToOtherSp.Sum ";
const string RoamUserToOtherSp_Domain = " RoamUserToOtherSp._Domain ";
const string NbrSuccMesForRoamersSum = " NbrSuccMesForRoamers.Sum ";
const string NbrSuccMesForRoamers_Domain = " NbrSuccMesForRoamers._Domain ";
};

module CSCFSUBSCRIP
{
    // subscription procedure related measurements
    const string AttSubScrip = " AttSubScrip ";
    const string SuccSubScrip = " SuccSubScrip ";
    const string FailSubScripSum = " FailSubScrip.Sum ";
    const string FailSubScrip_Cause = " FailSubScrip._Cause ";
};

module CSCFNOTIFY
{
    // notify procedure related measurements
    const string AttNotif = " AttNotif ";
    const string SuccNotif = " SuccNotif ";
    const string FailNotifSum = " FailNotif.Sum ";
    const string FailNotif_Cause = " FailNotif._Cause ";
};

module CSCFEMGSESS
{
    // emergency session control related measurements
    const string AttEmgSessEstab = " AttEmgSessEstab ";
    const string SuccEmgSessEstab = " SuccEmgSessEstab ";
    const string FailEmgSessEstabSum = " FailEmgSessEstab.Sum ";
    const string FailEmgSessEstab_Cause = " FailEmgSessEstab._Cause ";
};

```

```

// bgcf measurement
module BGCFSESS
{
    // session control related measurements
    const string AttSess = " AttSess ";
    const string SuccSessSum = " SuccSess.Sum ";
    const string SuccSess_Type = " SuccSess._Type ";
    const string AttSessToOtherNet = " AttSessToOtherNet ";
    const string SuccSessToOtherNet = " SuccSessToOtherNet ";
};

//mrfc measurement
module MRFCSESS
{
    // session control related measurements
    const string AttSessEstabM = " AttSessEstabM ";
    const string SuccSessEstabMSum = " SuccSessEstabM.Sum ";
    const string SuccSessEstabM_Type = " SuccSessEstabM._Type ";
    const string AnsSessEstabM = " AnsSessEstabM ";
    const string FailSessEstabMSum = " FailSessEstabM.Sum ";
    const string FailSessEstabM_Type = " FailSessEstabM._Type ";
};

module MRFCSESSMULTI
{
    // multi-party sessions related measurements
    const string AttSessEstabMulti = " AttSessEstabMulti ";
    const string SuccSessEstabMulti = " SuccSessEstabMulti ";
    const string AnsSessEstabMulti = " AnsSessEstabMulti ";
    const string FailSessEstabMultiSum = " FailSessEstabMulti.Sum ";
    const string FailSessEstabMulti_Cause = " FailSessEstabMulti._Cause ";
    const string AttSubScripMulti = " AttSubScripMulti ";
    const string SuccSubScripMulti = " SuccSubScripMulti ";
    const string FailSubScripMultiSum = " FailSubScripMulti.Sum ";
    const string FailSubScripMulti_Cause = " FailSubScripMulti._Cause ";
};

```

```

module MRFCANN
{
    // announcement service related measurements
    const string AttSessEstabAnn = " AttSessEstabAnn ";
    const string SuccSessEstabAnn = " SuccSessEstabAnn ";
    const string AnsSessEstabAnn = " AnsSessEstabAnn ";
    const string FailSessEstabAnnSum = " FailSessEstabAnn.Sum ";
    const string FailSessEstabAnn_Cause = " FailSessEstabAnn._Cause ";
};

module MRFCTRANS
{
    // transcoding service related measurements
    const string AttSessEstabTrans = " AttSessEstabTrans ";
    const string SuccSessEstabTrans = " SuccSessEstabTrans ";
    const string AnsSessEstabTrans = " AnsSessEstabTrans ";
    const string FailSessEstabTransSum = " FailSessEstabTrans.Sum ";
    const string FailSessEstabTrans_Cause = " FailSessEstabTrans._Cause ";
};

//mrfp measurement
module MRFPRTP
{
    // rtp related measurements
    const string OutRTPPkt = " OutRTPPkt ";
    const string IncRTPPkt = " IncRTPPkt ";
    const string OctOutRTPPkt = " OctOutRTPPkt ";
    const string OctIncRTPPkt = " OctIncRTPPkt ";
    const string LostIncRTPPkt = " LostIncRTPPkt ";
    const string MaxDelay = " MaxDelay ";
    const string MaxJitter = " MaxJitter ";
};

//mgcf measurement
module MGCFCALLCONTROL
{
    // call control related measurements, CS network originated

```



```

const string AttCallCsOri = " AttCallCsOri ";
const string SuccCallCsOri = " SuccCallCsOri ";
const string AnsCallCsOri = " AnsCallCsOri ";
const string FailCallCsOri = " FailCallCsOri ";
const string MeanSetupCsCall = " MeanSetupCsCall ";
// call control related measurements, IM CN originated
const string AttCallImCnOri = " AttCallImCnOri ";
const string SuccCallImCnOri = " SuccCallImCnOri ";
const string AnsCallImCnOri = " AnsCallImCnOri ";
const string FailCallImCnOri = " FailCallImCnOri ";
const string MeanSetupImCnCall = " MeanSetupImCnCall ";
// other call control related measurements
const string MaxSimuAnsCall = " MaxSimuAnsCall ";
const string MeanSimuAnsCall = " MeanSimuAnsCall ";
};

//imsmsgw measurement
module IMSMGWM3UA
{
    // m3ua related measurements
    const string NbrM3uaPktRecv = " NbrM3uaPktRecv ";
    const string NbrM3uaPktSent = " NbrM3uaPktSent ";
    const string NbrOctrM3uaPktRecv = " NbrOctrM3uaPktRecv ";
    const string nbrOctrM3uaPktSent = " nbrOctrM3uaPktSent ";
    const string meanM3uaCongestDur = " meanM3uaCongestDur ";
    const string NbrM3uaCongestDur = " NbrM3uaCongestDur ";
    const string MeanUnaM3uaDur = " MeanUnaM3uaDur ";
    const string NbrUnaM3uaDur = " NbrUnaM3uaDur ";
};

module IMSMGWMTP3
{
    // mtp3/mtp3b related measurements
    const string NbrMSURecv = " NbrMSURecv ";
    const string NbrMSUSent = " NbrMSUSent ";
    const string NbrOctMSUsRecv = " NbrOctMSUsRecv ";
    const string NbrOctMSUsSent = " NbrOctMSUsSent";

```

```

const string NnbrUnaMTP3 = " NnbrUnaMTP3";
const string MeanUnaMTP3Dur = " MeanUnaMTP3Dur ";
const string NbrAvaMTP3 = " NbrAvaMTP3";
};

module IMSMGWIPBEARERCONTROL
{
    // bearer control related measurements
    const string AttOutIPSetup = " AttOutIPSetup ";
    const string SuccOutIPSetup = " SuccOutIPSetup ";
    const string AttIncIPSetup = " AttIncIPSetup ";
    const string SuccIncIPSetup = " SuccIncIPSetup ";
    const string AttOutUpIni = " AttOutUpIni ";
    const string SuccOutUpIni = " SuccOutUpIni ";
    const string AttIncUpIni = " AttIncUpIni ";
    const string SuccIncUpIni = " SuccIncUpIni ";
};

module IMSMGWIPBEARERTRANS
{
    // bearer transport related measurements
    const string NbrRTPPkRecv = " NbrRTPPkRecv ";
    const string NbrRTPPkSent = " NbrRTPPkSent ";
    const string NbrOctRTPPkRecv = " NbrOctRTPPkRecv ";
    const string NbrOctRTPPkSent = " NbrOctRTPPkSent ";
    const string NbrLostRTPPk = " NbrLostRTPPk ";
    const string MaxDelay = " MaxDelay ";
    const string MaxJitter = " MaxJitter ";
};

module IMSMGWMAC
{
    // imsmgw mac flow related measurements
    const string NbrOctMGWMacSent = " NbrOctMGWMacSent ";
    const string NbrOctMGWMacRecv = " NbrOctMGWMacRecv ";
};

```



```

module IMSMGWMN
{
    // imsmgw mn interface flow related measurements
    const string NbrH248PktRecv = " NbrH248PktRecv";
    const string NbrH248PktSent = " NbrH248PktSent ";
    const string NbrOctH248PktRecv = " NbrOctH248PktRecv ";
    const string NbrOctH248PktSent = " NbrOctH248PktSent ";
};

module IMSMGWEQUIP
{
    // equipment related measurements
    const string MaxCpuUsage = " MaxCpuUsage ";
    const string MeanCpuUsage = " MeanCpuUsage ";
};

//hss measurement
module HSSUSR
{
    // user related measurements
    const string NbrSub = " NbrSub ";
    const string NbrPriUIId = " NbrPriUIId ";
    const string NbrPubUIIdSIP = " NbrPubUIIdSIP ";
    const string NbrPubUIIdTEL = " NbrPubUIIdTEL ";
    const string NbrPriSId = " NbrPriSId ";
    const string NbrPubSIdSIP = " NbrPubSIdSIP ";
    const string NbrPubSIdTel = " NbrPubSIdTel ";
    const string NbrPubUIIdReg = " NbrPubUIIdReg ";
    const string NbrPubUIIdNReg = " NbrPubUIIdNReg ";
    const string NbrPriUIIdReg = " NbrPriUIIdReg ";
};

module HSSREG
{
    // deregistration related measurements
    const string AttDeReg = " AttDeReg ";
    const string SuccDeReg = " SuccDeReg ";
}

```

```

    const string FailDeRegSum = " FailDeReg.Sum ";
    const string FailDeReg_Cause = " FailDeReg._Cause ";
};

module HSSAUTH
{
    // authentication related measurements
    const string AttAuth = " AttAuth ";
    const string SuccAuth = " SuccAuth ";
    const string FailAuthSum = " FailAuth.Sum ";
    const string FailAuth_Cause = " FailAuth._Cause ";
};

module HSSUSRUPD
{
    //user update related measurements
    const string AttUsrUpd = " AttUsrUpd ";
    const string SuccUsrUpd = " SuccUsrUpd ";
    const string FailUsrUpdSum = " FailUsrUpd.Sum ";
    const string FailUsrUpd_Cause = " FailUsrUpd._Cause ";
};

//slf measurement
module SLFROUTE
{
    //route query related measurements
    const string AttRoute = " AttRoute ";
    const string SuccRoute = " SuccRoute ";
};

//ibcf measurement
module IBCFMAC
{
    // ibcf mac flow related measurements
    const string NbrOctIBCFMacSent = "attReqAuthSetHlr";
    const string NbrOctIBCFMacRecv = " NbrOctIBCFMacRecv ";
};

```

```

module IBCFSESS
{
    //session related measurements
    const string AttSessEstabFromOtherSplbcf_Domain = " AttSessEstabFromOtherSplbcf_Domain ";
    const string ForbSessEstabFromOtherSplbcf_Domain = " ForbSessEstabFromOtherSplbcf_Domain ";
    const string AttSessEstabToOtherSplbcf_Domain = " AttSessEstabToOtherSplbcf_Domain ";
    const string ForbSessEstabToOtherSplbcf_Domain = " ForbSessEstabToOtherSplbcf_Domain ";
};

};

#endif

```

5.2 数据类型的 IDL 定义

```

//File "IMSNRMMeasurementSystem.idl"
#ifndef IMSNRMMeasurementSystem_idl
#define IMSNRMMeasurementSystem_idl

// #pragma prefix "3gppsa5.org"

/**
 * This module defines type definitions for performance measurements
 */
module IMSNRMMeasurementSystem
{

    // typedef unsigned long CountType;
    typedef unsigned long IMSMeasurementType1;
    typedef float IMSMeasurementType2;

    typedef unsigned short CauseType;
    const CauseType sum = 0;
    const CauseType other = 65535;
    const CauseType noResponse = 65534;

    // The following status codes are defined in the section 21 of IETF RFC 3261

```

```
typedef CauseType STATUScodeCause;

const STATUScodeCause BadRequest = 1;
const STATUScodeCause Unauthorized = 2;
const STATUScodeCause PaymentRequired = 3;
const STATUScodeCause Forbidden = 4;
const STATUScodeCause NotFound = 5;
const STATUScodeCause MethodNotAllowed = 6;
const STATUScodeCause NotAcceptable = 7;
const STATUScodeCause ProxyAuthenticationRequired = 8;
const STATUScodeCause RequestTimeout = 9;
const STATUScodeCause Gone = 10;
const STATUScodeCause RequestEntityTooLarge = 11;
const STATUScodeCause RequestURITooLong = 12;
const STATUScodeCause UnsupportedMediaType = 13;
const STATUScodeCause UnsupportedURIScheme = 14;
const STATUScodeCause BadExtension = 15;
const STATUScodeCause ExtensionRequired = 16;
const STATUScodeCause IntervalTooBrief = 17;
const STATUScodeCause TemporarilyUnavailable = 18;
const STATUScodeCause CallorTransactionDoesNotExist = 19;
const STATUScodeCause LoopDetected = 20;
const STATUScodeCause TooManyHops = 21;
const STATUScodeCause AddressIncomplete = 22;
const STATUScodeCause Ambiguous = 23;
const STATUScodeCause BusyHere = 24;
const STATUScodeCause RequestTerminated = 25;
const STATUScodeCause NotAcceptableHere = 26;
const STATUScodeCause RequestPending = 27;
const STATUScodeCause Undecipherable = 28;
const STATUScodeCause NotImplemented = 29;
const STATUScodeCause BadGateway = 30;
const STATUScodeCause ServiceUnavailable = 31;
const STATUScodeCause ServerTimeout = 32;
const STATUScodeCause VersionNotSupported = 33;
const STATUScodeCause MessageTooLarge = 34;
const STATUScodeCause BusyEverywhere = 35;
```

```

const STATUScodeCause Decline = 36;
const STATUScodeCause NotExistAnywhere = 37;

// The following Diameter causes are defined in the section 6.2.2 of 3GPP TS 29.229 v9.1.0.
typedef CauseType DIAMETERCause;

const DIAMETERCause DIAMETER_ERROR_USER_UNKNOWN = 1;
const DIAMETERCause DIAMETER_ERROR_IDENTITY_DONT_MATCH = 2;
const DIAMETERCause DIAMETER_ERROR_IDENTITY_NOT_REGISTERED = 3;
const DIAMETERCause DIAMETER_ERROR_ROAMING_NOT_ALLOWED = 4;
const DIAMETERCause DIAMETER_ERROR_IDENTITY_ALREADY_REGISTERED = 5;
const DIAMETERCause DIAMETER_ERROR_AUTH_SCHEME_NOT_SUPPORTED = 6;
const DIAMETERCause DIAMETER_ERROR_IN_ASSIGNMENT_TYPE = 7;
const DIAMETERCause DIAMETER_ERROR_TOO_MUCH_DATA = 8;
const DIAMETERCause DIAMETER_ERROR_NOT_SUPPORTED_USER_DATA = 9;
const DIAMETERCause DIAMETER_ERROR_FEATURE_UNSUPPORTED = 10;
const DIAMETERCause NO_REPLY = 11;

};
#endif

```

6 性能管理接口功能相关的文件

6.1 性能测量数据文件的 Schema 定义<measCollec.xsd>

下面的Schema文件中用到的字段的说明参见附录A，示例参见附录B。

版本号：PM FILE V1.0

```

<?xml version="1.0" encoding="UTF-8"?>
<!-- Measurement collection data file XML schema measCollec.xsd -->
<schema targetNamespace="http://latest/nmc-omc/cmNrm.doc#measCollec" elementFormDefault="qualified"
xmlns="http://www.w3.org/2001/XMLSchema" xmlns:mc="http://latest/nmc-omc/cmNrm.doc#measCollec">
  <!-- Measurement collection data file root XML element -->
  <element name="measCollecFile">
    <complexType>
      <sequence>
        <element name="fileHeader">
          <complexType>
            <sequence>

```



```

<element name="fileSender">
  <complexType>
    <attribute name="localDn" type="string" use="optional"/>
    <attribute name="elementType" type="string" use="optional"/>
  </complexType>
</element>
<element name="measCollec">
  <complexType>
    <attribute name="beginTime" type="dateTime" use="required"/>
  </complexType>
</element>
</sequence>
<attribute name="fileFormatVersion" type="string" use="required"/>
<attribute name="vendorName" type="string" use="optional"/>
<attribute name="dnPrefix" type="string" use="optional"/>
</complexType>
</element>
<element name="measData" minOccurs="0" maxOccurs="unbounded">
  <complexType>
    <sequence>
      <element name="managedElement">
        <complexType>
          <attribute name="localDn" type="string" use="optional"/>
          <attribute name="userLabel" type="string" use="optional"/>
          <attribute name="swVersion" type="string" use="optional"/>
        </complexType>
      </element>
      <element name="measInfo" minOccurs="0" maxOccurs="unbounded">
        <complexType>
          <sequence>
            <element name="job" minOccurs="0">
              <complexType>
                <attribute name="jobId" type="string" use="required"/>
              </complexType>
            </element>
            <element name="granPeriod">
              <complexType>

```



```

        <attribute name="duration" type="duration" use="required"/>
        <attribute name="endTime" type="dateTime" use="required"/>
    </complexType>
</element>
<element name="repPeriod" minOccurs="0">
    <complexType>
        <attribute name="duration" type="duration" use="required"/>
    </complexType>
</element>
<choice>
    <element name="measTypes">
        <simpleType>
            <list itemType="mc:measName"/>
        </simpleType>
    </element>
    <element name="measType" minOccurs="0" maxOccurs="unbounded">
        <complexType>
            <simpleContent>
                <extension base="mc:measName">
                    <attribute name="p" type="positiveInteger" use="required"/>
                </extension>
            </simpleContent>
        </complexType>
    </element>
</choice>
<element name="measValue" minOccurs="0" maxOccurs="unbounded">
    <complexType>
        <sequence>
            <choice>
                <element name="measResults">
                    <simpleType>
                        <list itemType="mc:measResultType"/>
                    </simpleType>
                </element>
                <element name="r" minOccurs="0" maxOccurs="unbounded">
                    <complexType>
                        <simpleContent>

```

```

        use="required"/>
        <extension base="mc:measResultType">
            <attribute name="p" type="positiveInteger"

        </extension>
        </simpleContent>
        </complexType>
        </element>
        </choice>
        <element name="suspect" type="boolean" minOccurs="0"/>
    </sequence>
    <attribute name="measObjLdn" type="string" use="required"/>
</complexType>
</element>
</sequence>
</complexType>
</element>
</sequence>
</complexType>
</element>
<element name="fileFooter">
    <complexType>
        <sequence>
            <element name="measCollec">
                <complexType>
                    <attribute name="endTime" type="dateTime" use="required"/>
                </complexType>
            </element>
        </sequence>
    </complexType>
</element>
</sequence>
</complexType>
</element>
<simpleType name="measNameWithSubCounter">
    <restriction base="string">
        <pattern
value="( CSCFREG.FailReg.Sum.|CSCFREG.FailReg._Cause.|CSCFREG.FailReReg.Sum.|CSCFREG.FailReR

```

eg.Sum.|CSCFREG.Fail3rdPartyReg.Sum.|CSCFREG.Fail3rdPartyReg._Cause.|CSCFREG.FailUsrRegStatQry.
Sum.|CSCFREG.FailUsrRegStatQry._Cause.|CSCFREG.FailSRegNotif.Sum.|CSCFREG.FailSRegNotif._Cause
.|CSCFSESS.FailSessEstab.Sum.|CSCFSESS.FailSessEstab._Cause.|CSCFUSRLOC.FailUsrLocQry.Sum.|
CSCFUSRLOC.FailUsrLocQry._Cause.|CSCFSESSINTERSP.AttSessEstabToOtherSp.Sum.|CSCFSESSINTER
SP.AttSessEstabToOtherSp._Domain.|CSCFSESSINTERSP.SuccSessEstabToOtherSp.Sum.|CSCFSESSINTER
SP.SuccSessEstabToOtherSp._Domain.|CSCFSESSINTERSP.AnsSessEstabToOtherSp.Sum.|CSCFSESSINTE
RSP.AnsSessEstabToOtherSp._Domain.|CSCFSESSINTERSP.ForbSessEstabToOtherSp.Sum.|CSCFSESSINT
ERSP.ForbSessEstabToOtherSp._Domain.|CSCFSESSINTERSP.AttSessEstabFromOtherSp.Sum.|CSCFSESSI
NTERSP.AttSessEstabFromOtherSp._Domain.|CSCFSESSINTERSP.SuccSessEstabFromOtherSp.Sum.|CSCFS
ESSINTERSP.SuccSessEstabFromOtherSp._Domain.|CSCFSESSINTERSP.AnsSessEstabFromOtherSp.Sum.|C
SCFSESSINTERSP.AnsSessEstabFromOtherSp._Domain.|CSCFSESSINTERSP.ForbSessEstabFromOtherSp.S
um.|CSCFSESSINTERSP.ForbSessEstabFromOtherSp._Domain.|CSCFROAMER.IniRegFromOtherSp.Sum.|C
SCFROAMER.IniRegFromOtherSp._Domain.|CSCFROAMER.NbrForbMesForRoamers.Sum.|CSCFROAMER
.NbrForbMesForRoamers._Domain.|CSCFROAMER.RoamUserToOtherSp.Sum.|CSCFROAMER.RoamUserT
oOtherSp._Domain.|CSCFROAMER.NbrSuccMesForRoamers.Sum.|CSCFROAMER.NbrSuccMesForRoamers
._Domain.|CSCFSUBSCRIP.FailSubScrip.Sum.|CSCFSUBSCRIP.FailSubScrip._Cause.|CSCFNOTIFY.FailNot
if.Sum.|CSCFNOTIFY.FailNotif._Cause.|CSCFEMGSESS.FailEmgSessEstab._Sum.|CSCFEMGSESS.
FailEmgSessEstab._Cause.|BGCSESS.SuccSess.Sum.|BGCSESS.SuccSess._Type.|MRFCSESS.SuccSessEst
abM.Sum.|MRFCSESS.SuccSessEstabM._Type.|MRFCSESS.FailSessEstabM.Sum.|MRFCSESS.FailSessEstab
M._Cause.|MRFCSESSMULTI.FailSessEstabMulti.Sum.|MRFCSESSMULTI.FailSessEstabMulti._Cause.|MRF
CSESSMULTI.FailSubScripMulti.Sum.|MRFCSESSMULTI.FailSubScripMulti._Cause.|MRFCANN.FailSessE
stabAnn.Sum.|MRFCANN.FailSessEstabAnn._Cause.|MRFCTRANS.FailSessEstabTrans.Sum.|MRFCTRANS.
FailSessEstabTrans._Cause.|HSSDEREG.FailDeReg.Sum.|HSSDEREG.FailDeReg._Cause.|HSSAUTH.FailAut
h.Sum.|HSSAUTH.FailAuth._Cause.|HSSUSRUPD.FailUsrUpd.Sum.|HSSUSRUPD.FailUsrUpd._Cause.|IBCF
SESS.AttSessEstabFromOtherSpIbcf._Domain.|IBCFSESS.ForbSessEstabFromOtherSpIbcf._Domain.|IBCFSE
SS.AttSessEstabToOtherSpIbcf._Domain.|IBCFSESS.ForbSessEstabToOtherSpIbcf._Domain.)\d{1,5}"/>

</restriction>

</simpleType>

<simpleType name="measNameWithoutSubCounter">

<restriction base="string">

<enumeration value="CSCFREG.AttReg"/>

<enumeration value="CSCFREG.SuccReg"/>

<enumeration value="CSCFREG.MeanSetupDur"/>

<enumeration value="CSCFREG.AttReReg"/>

<enumeration value="CSCFREG.SuccReReg"/>

<enumeration value="CSCFREG.Att3rdPartyReg"/>

<enumeration value="CSCFREG.Succ3rdPartyReg"/>

```

<enumeration value="CSCFREG.AttUsrRegStatQry"/>
<enumeration value="CSCFREG.SuccUsrRegStatQry"/>
<enumeration value="CSCFREG.AttRegNotif"/>
<enumeration value="CSCFREG.SuccRegNotif"/>
<enumeration value="CSCFSESS.AttSessEstab"/>
<enumeration value="CSCFSESS.SuccSessEstab"/>
<enumeration value="CSCFSESS.AnsSessEstab"/>
<enumeration value="CSCFSESS.MaxSimuAnsSess"/>
<enumeration value="CSCFSESS.SuccSessMeanEstab "/>
<enumeration value="CSCFSESS.SuccRespTraffic "/>
<enumeration value="CSCFUSRLOC, AttUsrLocQry"/>
<enumeration value="CSCFUSRLOC. SuccUsrLocQry"/>
<enumeration value="CSCFSUBSCRIP. AttSubScrip"/>
<enumeration value="CSCFSUBSCRIP. SuccSubScrip"/>
<enumeration value="CSCFNOTIFY. AttNotif"/>
<enumeration value="CSCFNOTIFY. SuccNotif"/>
<enumeration value="BGCFSESS. AttSess"/>
<enumeration value="BGCFSESS. AttSessToOtherNet"/>
<enumeration value="BGCFSESS. SuccSessToOtherNet"/>
<enumeration value="MRFCSESS. AttSessEstabM"/>
<enumeration value="MRFCSESS. AnsSessEstabM"/>
<enumeration value="MRFCSESSMULTI. AttSessEstabMulti"/>
<enumeration value="MRFCSESSMULTI. SuccSessEstabMulti"/>
<enumeration value="MRFCSESSMULTI. AnsSessEstabMulti"/>
<enumeration value="MRFCSESSMULTI. AttSubScripMulti"/>
<enumeration value="MRFCSESSMULTI. AttSubScripMulti"/>
<enumeration value="MRFCSESSMULTI. SuccSubScripMulti"/>
<enumeration value="MRFCANN. AttSessEstabAnn"/>
<enumeration value="MRFCANN. SuccSessEstabAnn"/>
<enumeration value="MRFCANN. AnsSessEstabAnn"/>
<enumeration value="MRFCTRANS. AttSessEstabTrans"/>
<enumeration value="MRFCTRANS. SuccSessEstabTrans"/>
<enumeration value="MRFCTRANS. AnsSessEstabTrans"/>
<enumeration value="MRFP RTP. OutRTPPk t"/>
<enumeration value="MRFP RTP. IncRTPPk t"/>
<enumeration value="MRFP RTP. OctOutRTPPk t"/>
<enumeration value="MRFP RTP. OctIncRTPPk t"/>

```



```

<enumeration value="MRFPRTP. LostIncRTPPkt"/>
<enumeration value="MRFPRTP. MaxDelay"/>
<enumeration value="MRFPRTP. MaxJitter"/>
<enumeration value="MGCFCALLCONTROL. AttCallCsOri"/>
<enumeration value="MGCFCALLCONTROL. SuccCallCsOri"/>
<enumeration value="MGCFCALLCONTROL. AnsCallCsOri"/>
<enumeration value="MGCFCALLCONTROL. FailCallCsOri"/>
<enumeration value="MGCFCALLCONTROL. MeanSetupCsCal"/>
<enumeration value="MGCFCALLCONTROL. AttCallImCnOri"/>
<enumeration value="MGCFCALLCONTROL. SuccCallImCnOri"/>
<enumeration value="MGCFCALLCONTROL. AnsCallImCnOri"/>
<enumeration value="MGCFCALLCONTROL. FailCallImCnOri"/>
<enumeration value="MGCFCALLCONTROL. MeanSetupImCnCall"/>
<enumeration value="MGCFCALLCONTROL. MaxSimuAnsCall"/>
<enumeration value="MGCFCALLCONTROL. MeanSimuAnsCall"/>
<enumeration value="IMSMGWM3UA. NbrM3uaPktRecv"/>
<enumeration value="IMSMGWM3UA. NbrM3uaPktSent"/>
<enumeration value="IMSMGWM3UA. NbrOctrM3uaPktRecv"/>
<enumeration value="IMSMGWM3UA. NbrOctrM3uaPktSent"/>
<enumeration value="IMSMGWM3UA. MeanM3uaCongestDur"/>
<enumeration value="IMSMGWM3UA. NbrM3uaCongestDur"/>
<enumeration value="IMSMGWM3UA. MeanUnaM3uaDur"/>
<enumeration value="IMSMGWM3UA. NbrUnaM3uaDur"/>
<enumeration value="IMSMGWMTP3. NbrMSURecv"/>
<enumeration value="IMSMGWMTP3. NbrMSUSent"/>
<enumeration value="IMSMGWMTP3. NbrOctMSUsRecv"/>
<enumeration value="IMSMGWMTP3. NbrOctMSUsSent"/>
<enumeration value="IMSMGWMTP3. NbrUnaMTP3"/>
<enumeration value="IMSMGWMTP3. MeanUnaMTP3Dur"/>
<enumeration value="IMSMGWMTP3. NbrAvaMTP3"/>
<enumeration value="IMSMGWBEARERCONTROL. AttOutIPSetup"/>
<enumeration value="IMSMGWBEARERCONTROL. SuccOutIPSetup"/>
<enumeration value="IMSMGWBEARERCONTROL. AttIncIPSetup"/>
<enumeration value="IMSMGWBEARERCONTROL. SuccIncIPSetup"/>
<enumeration value="IMSMGWBEARERCONTROL. AttOutUpIni"/>
<enumeration value="IMSMGWBEARERCONTROL. SuccOutUpIni"/>
<enumeration value="IMSMGWBEARERCONTROL. AttIncUpIni"/>

```

```

<enumeration value="IMSMGWBEARERCONTROL.SuccIncUpIni"/>
<enumeration value="IMSMGWBEARERTRANS.NbrRTPPktRecv"/>
<enumeration value="IMSMGWBEARERTRANS.NbrRTPPktSent"/>
<enumeration value="IMSMGWBEARERTRANS.NbrOctRTPPktRecv"/>
<enumeration value="IMSMGWBEARERTRANS.NbrOctRTPPktSent"/>
<enumeration value="IMSMGWBEARERTRANS.NbrLostRTPPkt"/>
<enumeration value="IMSMGWBEARERTRANS.MaxDelay"/>
<enumeration value="IMSMGWBEARERTRANS. MaxJitter"/>
<enumeration value="IMSMGWMAC. NbrOctMGWMacSent"/>
<enumeration value="IMSMGWMAC. NbrOctMGWMacRecv"/>
<enumeration value="IMSMGWMN. NbrH248PktRecv"/>
<enumeration value="IMSMGWMN. NbrH248PktSent"/>
<enumeration value="IMSMGWMN. NbrOctH248PktRecv"/>
<enumeration value="IMSMGWMN. NbrOctH248PktSent"/>
<enumeration value="IMSGMGWEQUIP. MaxCpuUsage"/>
<enumeration value="IMSGMGWEQUIP. MeanCpuUsage"/>
<enumeration value="HSSUSR. NbrSub"/>
<enumeration value="HSSUSR. NbrPriUIId"/>
<enumeration value="HSSUSR. NbrPubUIIdSIP"/>
<enumeration value="HSSUSR. NbrPubUIIdTEL"/>
<enumeration value="HSSUSR. NbrPriSIId"/>
<enumeration value="HSSUSR. NbrPubSIIdSIP"/>
<enumeration value="HSSUSR. NbrPubSIIdTel"/>
<enumeration value="HSSUSR. NbrPubUIIdReg"/>
<enumeration value="HSSUSR. NbrPubUIIdNReg"/>
<enumeration value="HSSUSR. NbrPriUIIdReg"/>
<enumeration value="HSSDEREG. AttDeReg"/>
<enumeration value="HSSDEREG. SuccDeReg"/>
<enumeration value="HSSAUTH. AttAuth"/>
<enumeration value="HSSAUTH. SuccAuth"/>
<enumeration value="HSSUSRUPD. AttUsrUpd"/>
<enumeration value="HSSUSRUPD. SuccUsrUpd"/>
<enumeration value="SLFROUTE. AttRoute"/>
<enumeration value="SLFROUTE. SuccRoute"/>
<enumeration value="IBCFMAC. NbrOctIBCFMacSent"/>
<enumeration value="IBCFMAC. NbrOctIBCFMacRecv"/>
</restriction>

```



```

</simpleType>
<simpleType name="measName">
  <union memberTypes="mc:measNameWithSubCounter mc:measNameWithoutSubCounter"/>
</simpleType>
<simpleType name="measResultType">
  <union memberTypes="decimal">
    <simpleType>
      <restriction base="string">
        <enumeration value="NIL"/>
      </restriction>
    </simpleType>
  </union>
</simpleType>
</schema>

```

6.2 性能测量数据文件的 XML header 定义

在实际性能测量数据文件中应该使用下面的XML header定义:

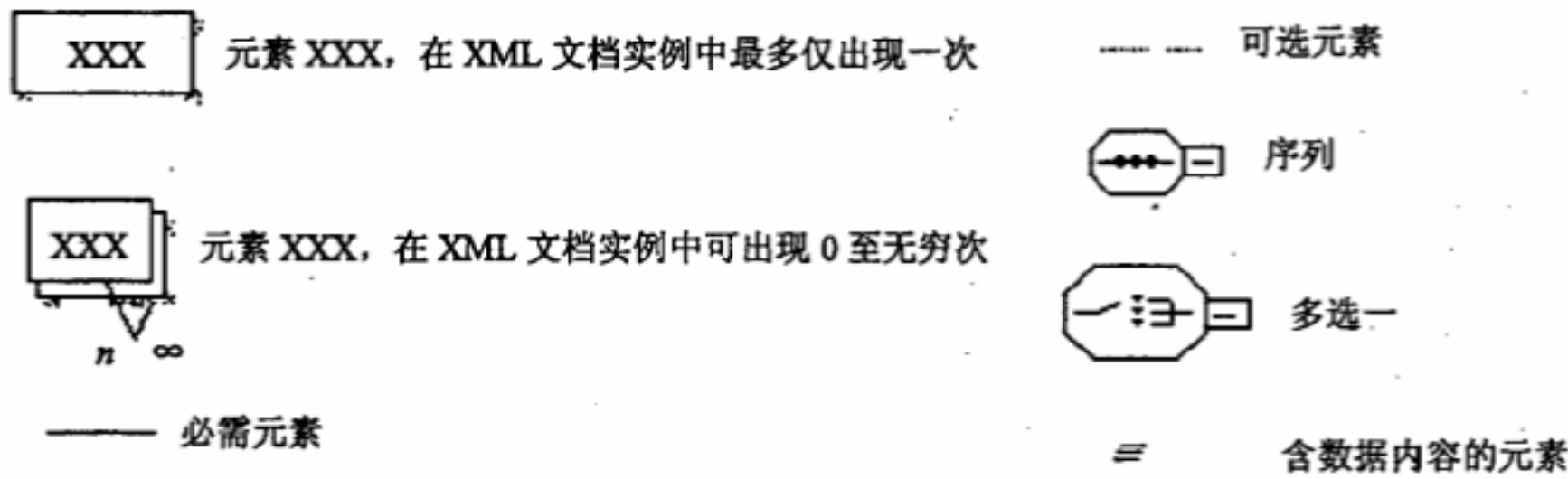
```

<?xml version="1.0" encoding="UTF-8"?>
<?xml-stylesheet type="text/xsl" href="MeasDataCollection.xsl"?>
<measCollecFile
  xmlns=
" http://latest/nmc-omc/cmNrm.doc#measCollec "
>

```

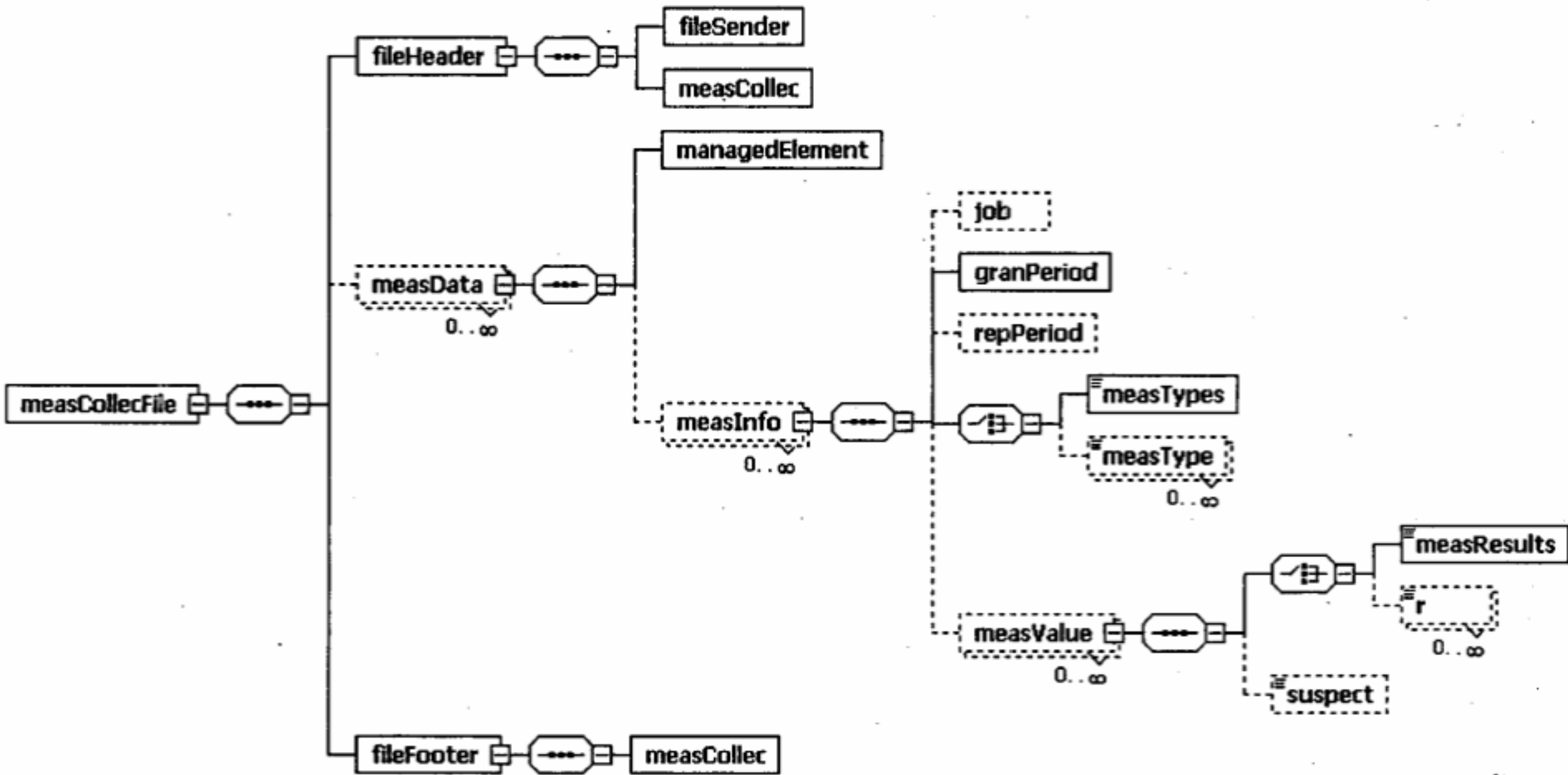
附录 A
(规范性附录)
Schema 文档补充说明

A.1 XML Schema文档结构标记约定如下图所示。



A.2 性能测量数据文件的Schema定义<measCollec.xsd>

a) XML Schema 文档结构图如下：



b) XML Schema 文档元素/属性说明如下：

元素/属性 名称		元素/属性 描述
measCollecFile		性能数据采集文件。是该Schema的根元素。由三个子元素组成：文件头部（fileHeader）、采集数据(measData)以及文件尾部(FileFooter)
fileHeader	fileFormatVersion	文件头部。由两个子元素组成：文件发送方（fileSender）、测量采集开始时间（measCollec）。自身包含三个属性：文件格式版本（fileFormatVersion）、制造商名称（vendorName）和识别名前缀（dnPrefix）
	vendorName	
	dnPrefix	
measData		性能测量数据。在一份采集上报文件中可出现零（未采集到数据）至多次。由两个子元素组成：管理网元(managedElement)及其性能采集结果(measInfo)
fileFooter		文件尾部。包含子元素测量采集结束时间（measCollec）
fileSender	localDn	文件发送发。包含两个属性：本地识别名（localDN）、网元类型（elementType）
	elementType	

表（续）

元素/属性 名称		描述
managedElement	localDn	被管网元。包括三个属性本地识别名（localDn）、用户友好名（userLabel）、软件版本（swVersion）
	userLabel	
	swVersion	
measInfo		测量信息。由四个子元素组成：测量任务（job）、测量粒度周期（granPeriod）、测量上报周期（repPeriod）、测量类型（measType/ measTypes）和测量值（measValue）
job		测量任务。该元素为可选元素。由其类型JobID唯一标识
granPeriod	duration	测量粒度周期。包含两个属性：持续时间（duration）、结束时间（endTime）
	endTime	
repPeriod	duration	测量上报周期。该元素为可选元素。包含唯一属性：持续时间（duration）
measTypes/measType		采集类型。均由measName扩展而来。在XML文件实例中，两个元素择一使用。不同的是measTypes是以列表方式呈现，且只出现一次；measType可出现多次，由属性值为非负数的p加以区分
measType p		p为属性限定。属性用于区分不同的measType
measResults/r		采集结果。均由measResultType扩展而来。在XML文件实例中，两个元素择一使用。值为空表示该采集项的取值无法获得。不同的是measResults是以列表方式呈现，且只出现一次；r可出现多次，由属性值为非负数的p加以区分。r的p属性应与measType的p属性一一对应
r p		p为属性限定。表示对<measType p>的一个采集结果应答。<r p>需和<measType p>一一对应
measValue	measObjLdn	采集值。由两个子元素组成：采集结果列表(measResults/r)和一个标记采集数据是否可信的标志位(suspect)。本身还包含一个属性：测量对象本地识别名(measObjLdn)
suspect		用于标记采集值是否可信。默认值为False（即可信）
measCollec	beginTime	性能采集开始时间
	endTime	性能采集结束时间
measName		性能测量项名称。分为包含SubCounter（measNameWithSubCounter）和不含SubCounter（measNameWithoutSubCounter）两类。从3GPP规范中扩展而来
measNameWithSubCounter		含SubCounter的数据测量项名称。表示为familyname.measurename.subcounter形式。从3GPP规范中扩展而来
measNameWithoutSubCounter		不含SubCounter的数据测量项名称。表示为familyname.measurename形式。从3GPP规范中扩展而来

附录 B

(资料性附录)

性能管理功能相关 XML 文件示例:

B.1 性能管理功能相关XML文件示例一

```
<?xml version="1.0" encoding="UTF-8"?>
```

```
<?xml-stylesheet type="text/xsl" href="MeasDataCollection.xsl"?>
```

```
<!-- The following is an example of a XML schema based XML measurement report file without use of optional
positioning attributes on measurement types and results -->
```

```
<measCollecFile xmlns="http://latest/nmc-omc/cmNrm.doc#measCollec"
```

```
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
```

```
xsi:schemaLocation="http://latest/nmc-omc/cmNrm.doc#measCollec
```

```
D:\Downloads\GB\WCDMAM~2.XSD">
```

```
<fileHeader fileFormatVersion="PM FILE V1.0" vendorName="Company NN"
```

```
dnPrefix="DC=a1.companyNN.com,SubNetwork=1,IRPAgent=1">
```

```
<fileSender
```

```
localDn="SubNetwork=CountryNN,MeContext=MEC-Gbg-1,ManagedElement=RNC-Gbg-1"
```

```
elementType="RNC"/>
```

```
<measCollec beginTime="2000-03-01T14:00:00+02:00"/>
```

```
</fileHeader>
```

```
<measData>
```

```
<managedElement
```

```
localDn="SubNetwork=CountryNN,MeContext=MEC-Gbg-1,ManagedElement=RNC-Gbg-1" userLabel="RNC
Telecomville"/>
```

```
<measInfo>
```

```
<job jobId="1231"/>
```

```
<granPeriod duration="PT900S" endTime="2000-03-01T14:14:30+02:00"/>
```

```
<repPeriod duration="PT1800S"/>
```

```
<measTypes>mscBasicMeasurement.failImsiAttachsPerCause.50000
```

```
hardHandoverInterSystemMeasurement.failRelocOutInterSysPsPerCause.0
```

```
mobileManagementMeasurement.failIntraSgsnRaUpdatePerCause.22222
```

```
mobileManagementMeasurement.failIntraSgsnRaUpdatePerCause.1</measTypes>
```

```
<measValue measObjLdn="RncFunction=RF-1,UtranCell=Gbg-997">
```

```
<measResults>234 345 567 789</measResults>
```


参 考 文 献

【1】3GPP TS 32.623 Telecommunication management;Configuration Management (CM);Generic network resources Integration Reference Point (IRP); Common Object Request Broker Architecture (CORBA)

【2】3GPP TS 32.633 Telecommunication management;Configuration Management (CM);Core Network

【2】Resources Integration Reference Point (IRP): Common Object Request Broker Architecture (CORBA)

【3】3GPP TS 32.643 Telecommunication management;Configuration Management (CM);UTRAN network resources Integration Reference Point (IRP): Common Object Request Broker Architecture (CORBA)

【4】3GPP TS 32.653 Telecommunication management;Configuration Management (CM);GERAN network resources Integration Reference Point (IRP): Common Object Request Broker Architecture (CORBA)

中华人民共和国
通信行业标准
统一 IMS 网络管理接口技术要求
第 2 部分：基于 CORBA 技术的信息模型设计
YD/T 2330.2-2011

*

人民邮电出版社出版发行
北京市崇文区夕照寺街 14 号 A 座
邮政编码：100061
宝隆元（北京）印刷技术有限公司印刷
版权所有 不得翻印

*

开本：880×1230 1/16 2012 年 1 月第 1 版
印张：3.5 2012 年 1 月北京第 1 次印刷
字数：96 千字
ISBN 978 - 7 - 115 - 2511/ 12 - 89
定价：35 元
本书如有印装质量问题，请与本社联系 电话：(010)67114922