TSGS#26(04)0768

Source: **SA5 (Telecom Management)**

Title: **2 Rel-6 CR 32.101/2 Principles and high level requirements / Architecture**

Document for: **Approval**

Agenda Item: **7.5.3**

Doc1stevel	Specific a	CR	R	Phase	Subject	Ca	VersCu	Doc2ndLev	WorkitemsI D
SP-040768	32.101	026	--	Rel-6	Add sftp (secure ftp) as a valid File Transfer Protocol - Align with 32.341 File Transfer IRP Requirements	F	6.0.0	S5-042722	OAM-AR
SP-040768	32.102	037	--	Rel-6	Corrections and updates	F	6.3.0	S5-042756	OAM-AR

CR-Form-v7

CHANGE REQUEST

⌘	32.101	CR	026	⌘	rev	-	⌘	Current version:	6.0.0	⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: | UICC apps⌘ ☐ ME ☐ Radio Access Network X Core Network X

Title:	⌘	Add sftp (secure ftp) as a valid File Transfer Protocol - Align with 32.341 File Transfer IRP Requirements
Source:	⌘	**SA5** (michael.truss@motorola.com)
Work item code:	⌘	OAM-AR
Date:	⌘	19/11/2004
Category:	⌘	**F**
Release:	⌘	Rel-6

Use one of the following categories:
- ***F*** *(correction)*
- ***A*** *(corresponds to a correction in an earlier release)*
- ***B*** *(addition of feature),*
- ***C*** *(functional modification of feature)*
- ***D*** *(editorial modification)*

Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:

2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*

Reason for change:	⌘	The File Transfer IRP (32.341) already states support for sftp, however it is not listed as a valid protocol by 32.101.
Summary of change:	⌘	Add ftp as a valid Application Layer Protocols for Bulk & File Transfer
Consequences if not approved:	⌘	Mis-alignment between 32.101 and 32.341

Clauses affected:	⌘	3.2, Annex A

Other specs affected: ⌘

Y	N	
	X	Other core specifications
	X	Test specifications
	X	O&M Specifications

⌘

Other comments: ⌘

Change in Clause 3.2

3.2 Abbreviations

Ö

SDH	Synchronous Digital Hierarchy
sftp	secure ftp
SLA	Service Level Agreement
SNMP	Simple Network Management Protocol (IETF)
SNMP/SMI	SNMP/Structure of Management Information
SOM	Service Operations Management
SS	Solution Set
SS7	Signalling System No. 7
SSH	Secure Shell
SSL	Secure Sockets Layer
TCP/IP	Transmission Control Protocol/ Internet Protocol
tftp	trivial ftp

Ö

End of Change in Clause 3.2

Change in Clause Annex A

Annex A (normative): 3GPP Management Application Layer Protocols

The valid Management Application Layer Protocols for 3GPP are:

- CMIP (see references [20], [21]);

NOTE: Normative references relating to running CMIP over OSI application, presentation and session layers are [9] - [12] and [23] - [42].

- SNMP (see reference [6]);
- CORBA IIOP (see references [8] and [52]).

The valid Application Layer Protocols for Bulk & File Transfer are:

- FTAM (see references [13] ñ [19]);
- ftp (see reference [4]);
- tftp (see reference [5]).
- sftp (secure ftp)

NOTE: sftp is an implementation of ftp that uses SSL (SSH-1 or SSH-2 transport protocol) to provide a secure ftp. There are many commercial and open source implementations available. An IETF Secure Shell working group exists whose goal ì is to update and standardize the popular SSH protocolî. Currently no IETF RFCs are available, however a number of IETF drafts can be found at the working groups home web site: http://www.ietf.org/html.charters/secsh-charter.html

End of Change in Annex A
End of Document

3GPP TSG-SA5 (Telecom Management) **S5-042756**
Meeting #40, Sanya, CHINA, 15 - 19 November 2004

CR-Form-v7

CHANGE REQUEST

⌘ **32.102** **CR** **037** ⌘ **rev** **-** ⌘ Current version: **6.3.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: | UICC apps⌘ ☐ ME ☐ Radio Access Network **X** Core Network **X**

Title:	⌘	Corrections and updates
Source:	⌘	**SA5** (tommy.berggren@teliasonera.com)
Work item code:	⌘	OAM-AR
Date:	⌘	19/11/2004
Category:	⌘	**F**
Release:	⌘	Rel-6

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:
2 (GSM Phase 2)
R96 (Release 1996)
R97 (Release 1997)
R98 (Release 1998)
R99 (Release 1999)
Rel-4 (Release 4)
Rel-5 (Release 5)
Rel-6 (Release 6)

Reason for change:	⌘	References, definitions and abbreviations list not updated after major restructuring of the TS.
Summary of change:	⌘	Clean up of references. Updates of definitions and abbreviations.
Consequences if not approved:	⌘	Unclear and misleading requirements.

Clauses affected:	⌘	2, 3, 7.3.2, 7.3.3, 10.1, 10.3, 14, A.1.5

Other specs affected: ⌘	Y	N	
		X	Other core specifications ⌘
		X	Test specifications
		X	O&M Specifications

Other comments: ⌘

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

[1] ITU-T Recommendation M.3010 (2000): "Principles for a Telecommunications management network".

[2] 3GPP TS 32.101: "Telecommunication management; Principles and high level requirements".

~~[3] Void.~~

[3~~4~~] ITU-T Recommendation X.200 (1994): "Information technology - Open Systems Interconnection - Basic Reference Model: The basic model".

[4~~5~~] 3GPP TS 32.150: "Telecommunication management; Integration Reference Point (IRP) Concept and definitions".

~~[6] Void.~~

~~[7] Void.~~

~~[8] Void.~~

[5~~9~~] TMF GB910: "Smart TMN Telecom Operations Map (Release 2.1)". http://www.tmforum.org

[6~~10~~] TMF GB909: "Smart TMN Technology Integration Map (Issue 1.1)". http://www.tmforum.org

~~[11] ITU-T Recommendation M.3013 (2000): "Considerations for a telecommunications management network".~~

[7~~12~~] 3GPP TS 23.002: "Network architecture".

[8~~13~~] 3GPP TS 23.101: "General UMTS Architecture".

~~[14] 3GPP TS 32.111 parts 1 to 4: "Telecommunication management; Fault Management;".~~

~~[15] OMG: "Unified Modelling Language Specification, Version 1.4, September 2001". http://www.omg.org/technology/documents/formal/uml.htm~~

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the following definitions apply:

Ö

managed object: defined in TS 32.101 [2].

management infrastructure: Defined in TS 32.101 [2].

market acceptance: means that an item has been accepted in the market as evidenced by annual sales, length of time available for sale, and after-sale support capability.

modular: pertaining to the design concept in which interchangeable units are employed to create a functional end product.

Ö

3.2 Abbreviations

For the purposes of the present document, the following abbreviations apply:

3G	3rd Generation
AAA	Authentication, Authorisation and Accounting
AN	Access Network
AS	Application Server
ATM	Asynchronous Transfer Mode
AUC	Authentication Centre
BG	Border Gateway
BGCF	Breakout Gateway Control Function
BSC	Base Station Controller
BSS	Base Station Subsystem
BTS	Base Transceiver Station
CAMEL	Customised Applications for Mobile network Enhanced Logic
CBC	Cell Broadcast Center
CBS	Cell Broadcast Service
CIM	Common Information Model Specification (from DMTF)
CMIP	Common Management Information Protocol
CMIS	Common Management Information Service
CMISE	Common Management Information Service Element
CN	Core Network
CORBA	Common Object Request Broker Architecture
CS	Circuit Switched
CSCF	Call Session Control Function
DCN	Data Communication Network
DECT	Digital Enhanced Cordless Telecommunications
DSS1	Digital Subscriber System 1
EIR	Equipment Identity Register
EM	Element Manager
E-OS	Element Management Layer-Operations System
~~F/W~~	~~Firewall~~
FM	Fault Management
FTAM	File Transfer, Access and Management
GCR	Group Call Register
GDMO	Guidelines for the Definition of Managed Objects
GGSN	Gateway GPRS Support Node
GMLC	Gateway Mobile Location Center
GMSC	Gateway MSC
GPRS	General Packet Radio Service
GTT	Global Text Telephony
HLR	Home Location Register
HSS	Home Subscriber Server
HTTP	HyperText Transfer Protocol
HW	Hardware
I-CSCF	Interrogating CSCF
IDL	Interface Definition Language
IIOP	Internet Inter-ORB Protocol
IM	Information Model
IM-MGW	IP Multimedia Media Gateway
IMS	IP Multimedia Subsystem

INAP	Intelligent Network Application Part
IP	Internet Protocol
IRP	Integration Reference Point
IS	Information Service
ISDN	Integrated Services Digital Network
IWU	Inter Working Unit
LCS	Location Services
LMU	Location Measurement Unit
MD	Mediation Device
ME	Mobile Equipment
MGCF	Media Gateway Control Function
~~MIB~~	~~Management Information Base~~
MMI	Man-Machine Interface
~~MML~~	~~Man-Machine Language~~
MMS	Multimedia Messaging Service
MNP	Mobile Number Portability
MNP-SRF	Mobile Number Portability/Signalling Relay Function
MRF	Multimedia Resource Function
MRFC	Multimedia Resource Function Controller
MRFP	Multimedia Resource Function Processor
MSC	Mobile service Switching Centre
MT	Mobile Termination
NE	Network Element
NM	Network Manager
N-OS	Network Management Layer-Operations System
NPDB	Number Portability Database
NR	Network Resource
NRM	Network Resource Model
NSS	Network Switching Subsystem
NW	Network
OMG	Object Management Group
OS	Operations System
OSA	Open Services Access
OSF	Operations System Functions
P-CSCF	Proxy CSCF
PDH	Plesiochronous Digital Hierarchy
PS	Packet Switched
PSA	Product Specific Applications
PSS	Packet Switched Service
PSTN	Public Switched Telephone Network
QA	Q-Adapter
QoS	Quality of Service
RNC	Radio Network Controller
RNS	Radio Network System
RSVP	Resource ReserVation Protocol
S-CSCF	Serving CSCF
SDH	Synchronous Digital Hierarchy
SGSN	Serving GPRS Support Node
SGW	Signalling Gateway
SIM	Subscriber Identity Module
~~SLA~~	~~Service Level Agreement~~
SLF	Subscription Locator Function
SMI	Structure of Management Information
SMLC	Serving Mobile Location Center
SMS	Short Message Service
SNM	Sub-Network Manager
SNMP	Simple Network Management Protocol
SS	Solution Set
SS7	Signalling System No. 7
SW	Software
TA	Terminal Adapter
TE	Terminal Equipment

TM	Telecom Management
TMN	Telecommunications Management Network as defined in ITU-T Recommendation M.3010 [1]
UE	User Equipment
UML	Unified Modelling Language
USAT	USIM/SIM Application Toolkit
USIM	UMTS Subscriber Identity Module
UTRA	Universal Terrestrial Radio Access
UTRAN	Universal Terrestrial Radio Access Network
VHE	Virtual Home Environment
VLR	Visitor Location Register
WAG	WLAN Acceess Gateway
WBEM	Web Based Enterprise Management
WS	WorkStation
XML	eXtensible Markup Language

7.3.2 Interfaces

A PLMN will consist of many different types of components based on different types of technologies. There will be access-, core-, transmission- and service node networks and many of the components have already been the targets for Telecom Management standardisation at different levels. Many of these standards will be reused and the management domain of a PLMN will thereby consist of many TMNs. The architecture of PLMN TMNs should support distributed TMNs and TMN-interworking on peer-to-peer basis.

The Telecom Management Architecture can vary greatly in scope and detail, because of scale of operation and that different organisations may take different roles in a PLMN (see clause 5). The architecture of PLMN TMNs should provide a high degree of flexibility to meet the various topological conditions as the physical distribution and the number of NEs. Flexibility is also required to allow high degree of centralisation of personnel and the administrative practices as well as allowing dispersion to administrative domains (see further clause 10). The 3G Telecom Management architecture should be such that the NEs will operate in the same way, independently of the OS architecture.

Figure 7.2 illustrates the basic domains in a 3GPP system (identified in 3GPP Technical Standards [7~~12~~], [8~~13~~]), related management functional areas and introduces Interface-N (Itf-N).

Ö

7.3.3 Entities of a 3GPP system

To provide the mobile service as defined in a 3GPP system, some specific functions are introduced [7~~12~~]. These functional entities can be implemented in different physical equipments or gathered. In any case, exchanges of data occur between these entities and from the Telecom Management perspective they can all normally be treated as network elements. The basic telecom management functional areas such as fault management, configuration management, performance management and security management are all applicable to these entities. As such they are all the targets for 3GPP Telecom Management technical standards.

As discussed in clause 5, there will be many possible ways to build a 3GPP system and thereby many possible architectures of a mobile system. The entities presented in figure 7.3 should be treated as the fundamental building blocks of any possible implementation of a 3GPP system.

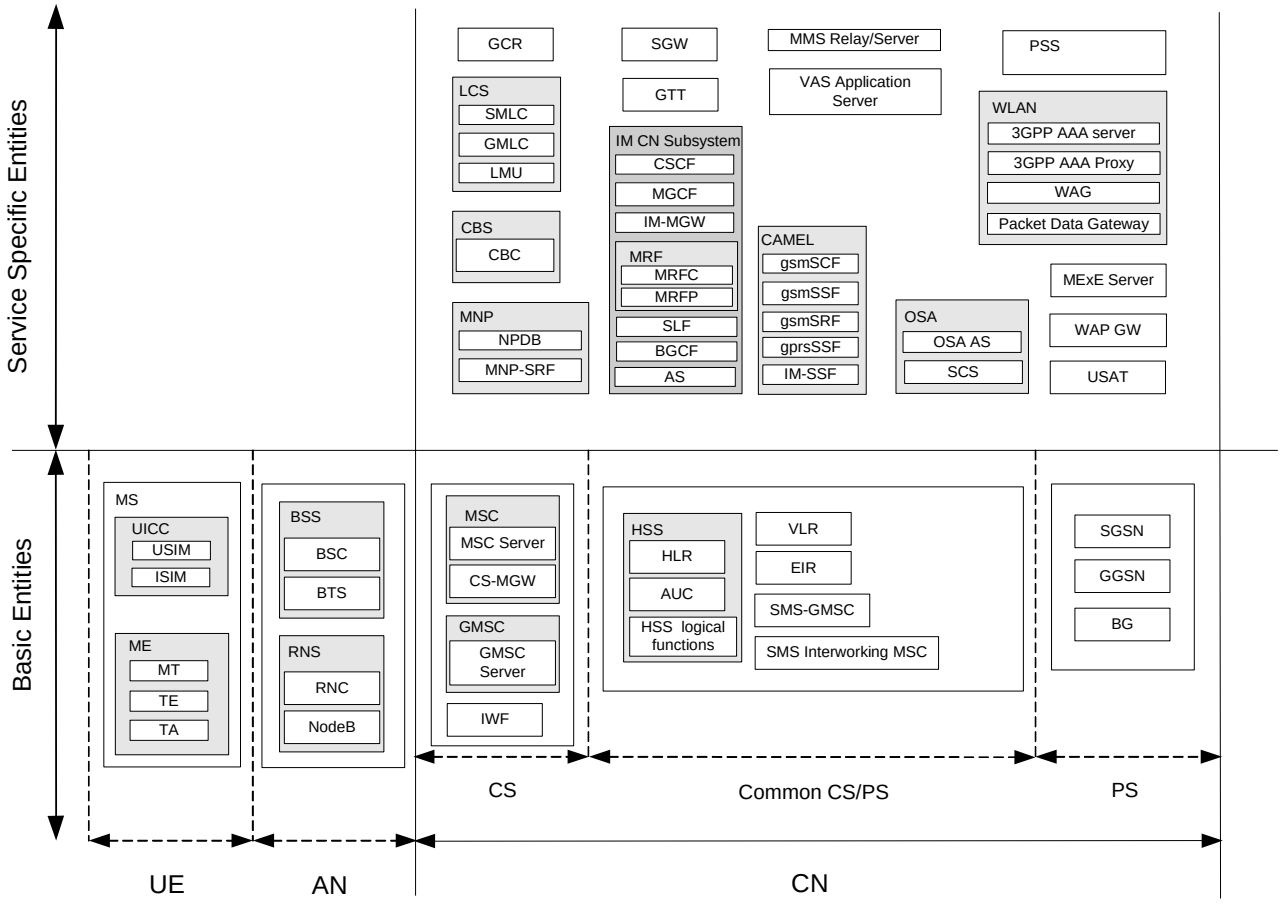

Figure 7.3: Examples of entities of the mobile system to be managed

In figure 7.4 the prime domains for the standardisation effort of 3GPP Telecom Management are shown as shaded.

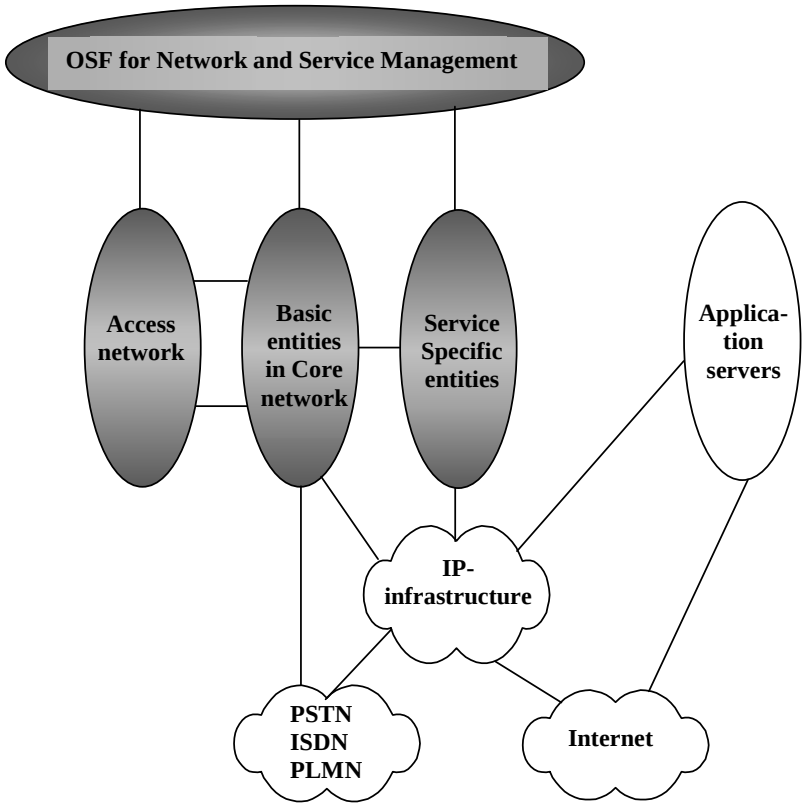

Figure 7.4: High level 3GPP system Network architecture

10 Integration Reference Points (IRPs)

10.1 General

Relating to the OSI functional areas "FCAPS", IRPs are here introduced addressing parts of "FCPS" ñ Fault, Configuration, Performance, and Security management. Comparing with TMF TOM (Telecom Operations Map) [59], the introduced IRPs address process interfaces at the EML-NML (Element Management Layer ñ Network Management Layer) boundary. In the 3GPP context, this is applied to the Itf-N between EM-NM and NE-NM.

Ö

10.3 Network infrastructure IRPs

When providing integrated management solutions for multi-vendor networks, there is a strong requirement that the NEs and the management solutions that go together with them are systems integratable.

It should be noted that these IRPs could be provided by either the NE, or the Element Manager (EM) or Sub-Network Manager (SNM) that goes together with the type of NE. There is actually not a clear distinction any more between NE and element management applications, mainly due to the increased processing capacity of the equipment platforms. Embedded Element Managers providing a web user interface is a common example of that.

These IRPs are introduced to ensure interoperability between Product-Specific Applications (PSA) and the Network & System Management Processes of the Network Manager (ref [2] & [59]) shown in the figure 10.3. These IRPs are considered to cover the most basic needs of task automation.

Ö

Further detail on the definition of IRPs can be found in 3GPP TS 32.150 [45].

14 Mediation/Integration

The increase in the need to incorporate a hybrid set of technologies, multiple protocols and heterogeneous resources requires the availability of open management interfaces between the management systems and the different network resources. These interfaces require an underlying mechanism to mediate - interpret, translate, and handle data - between the various data representations and protocols. A set of Technology Integration Points [610] can be identified and will need to be supported.

Software components on the open market as automatic conversion applications, gateways, mediation applications will be valuable products to fulfil the challenging task to incorporate multiple protocols and heterogeneous resources.

Figure 14.1 summarises Technology Integration Points for some technologies:

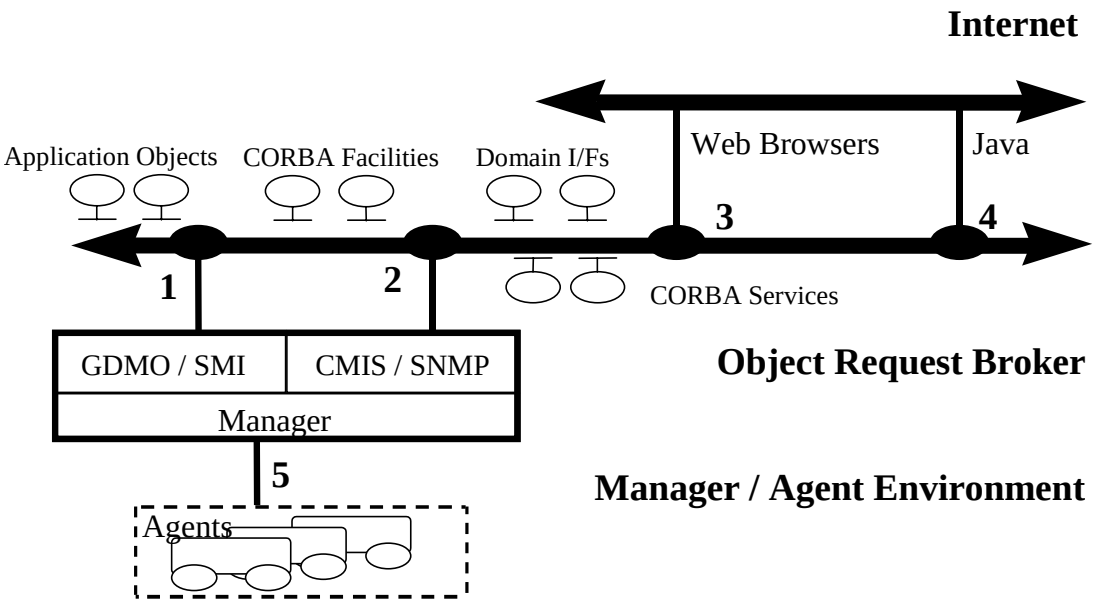

Figure 14.1: Technology Integration Points [610]

Essentially, figure 14.1 indicates that from the technologies selected, three technology areas will need to be integrated. These are:

- Internet/Web based services;
- Object Request Broker (CORBA) based services;
- Telecom based Manager/Agent services (i.e. CMIP/GDMO and SNMP/SMI).

In order to provide adequate points of integration between these areas of technology, five Integration Points (IPs) have been identified - as outlined in table 14.1:

Table 14.1 : Technology Integration Points [6~~10~~]

	Managed Objects (GDMO/SMI)	Management Services (CMISE/SNMP)	Java Objects	Web Browser (HTTP/HTML)	TMN Agent
CORBA Objects	IP1		IP4	IP3	
CORBA Services		IP2			
TMN Manager					IP5

IP1 Provides mapping of objects defined in CORBA/IDL to managed objects defined in GDMO or SMI.
IP2 Provides mapping of appropriate CORBA Services to CMIS and SNMP services.
IP3 Provides a mapping of Web Browser technology access to CORBA objects (for situations where this may be needed as an addition to/replacement of Browser access to a database).
IP4 Provides a mapping between Java based objects and CORBA objects.
IP5 Provides a high level convenient programming interface for the rapid development of TMN based manager/agent interactions. It also provides a convenient point of integration if it is necessary to separate out the two sides of the manager/agent interface from the point of view of technology selection. For example, allowing the manager role to perhaps be supported in a Web-based environment, but giving a good point of integration with a TMN based agent.

A.1.5 Data Communication Network (DCN)

A DCN supporting a TMN has traditionally conformed to the network service of the OSI reference model for ITU-T applications as specified in ITU-T Recommendation X.200 [3~~4~~]. ITU-T Recommendation X.25 has been a commonly used packet protocol. However, the evolution of telecommunication services is merging circuit-switched and packet-switched modes with advancing technologies of ISDN, ATM, SDH, and the Internet. A variety of telecommunications services can be employed as long as integrity of information transfer can be preserved.

Within a TMN, the necessary physical connection, such as circuit-switched or packet-switched, may be offered by communication paths constructed with various network components, including dedicated lines, X.25 packet-switched data network, ISDN, common channel signalling network, public-switched telephone network, local area networks, terminal controllers, etc. The facilities can be either dedicated to a DCN or shared resources (for example, using SS No. 7 or an existing X.25 or IP-based packet-switched network).

Equipment supporting an OSF shall provide for two modes of data communication. These are spontaneous transmission of messages (e.g. for the NEF to the OSF) and a two-way dialogue (e.g. as the OSF obtains supporting information from the NEF and sends commands to the NEF or transfer messages to or from another OSF). In addition, an OSF is responsible for assuring the integrity of the data channels through a DCN. Physical connectivity in a local environment may be provided by a variety of subnetwork configurations including point-to-point, star, bus or ring.

The DCN may consist of a number of individual subnetworks of different types, interconnected together. The DCN may be a local path or a wide-area connection among distributed physical blocks. The DCN is technology independent and may employ any single or combination of transmission technologies.