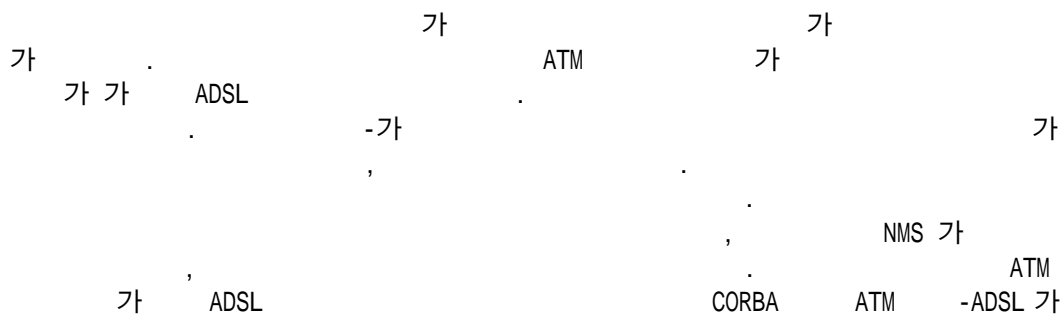


# A Study on CORBA-based ATM.ADSL Network Resource Management Systems Design and Construction Project using Object-oriented Network Resource Modeling Technique

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## Abstract

It is necessary to manage an enormous size of network due to an explosive expansion of access network such as ADSL networks. Now, ATM networks are used as backbone networks and ADSL networks are spotlighted on account of low cost per speed. Network management systems are strongly required for high service reliability and network stability. To effectively manage distributed network resources, distributed network management frameworks are required. This paper first addresses object-oriented development methodology, then models real networks, and show real system construction. As a result, we show CORBA-based ATM-ADSL total network management system to control backbone and access networks.

1.

ATM(Asynchronous Transfer Mode)  
가

가

가 ADSL(Asymmetric Digital Subscriber Line)  
 가 ATM 가 ADSL  
 ATM.ADSL

ITU- T M.3400 [1] TMN ATM  
 가 ADSL 가  
 ATM.ADSL NMS (Network Management System)

X.901 RM-ODP(Reference Mode of Open Distributed processing) [2] OMT(Object Modeling  
 Technique) [3] RM-ODP OMT II ITU-T  
 OO(Object-Oriented)

가 가

가

NMS 가  
 SNMP, GDMO/ASN.1 [4], JIDM(Joint Inter-Domain Management) [5] CORBA [6]

, NMS 가

, III , II

, IV

ATM , ATM

ATM

ADSL  
 ADSL

V

ATM.ADSL NMS

VI

II.

II.1 RM-ODP

ODP IT(Information Technology)  
 ITU(International Telecommunication Union) ISO(International  
 Organization for Standardization) ODP  
 가 (viewpoint) , , (Information  
 (Enterprise Viewpoint), Viewpoint),  
 (Computational Viewpoint), (infrastructure)  
 (Engineering Viewpoint),

(Technology Viewpoint)

RM-ODP

1

1.

	✓		
	✓		
	✓		가 가
	✓	3.1	4.1
	✓		
	✓	Broker Architecture)	CORBA(Common Object Request

RM-ODP

OMT

## II.2 OMT

( : Computational Model) RM-ODP ( : Information model)

OMT / Rumbaugh OMT UML(Unified Modeling Language)[7]

OMT (Object), (Dynamic), (Functional) 3 가 (relationship)

3

## III. ATM

ATM

ITU-T G.805[8]

(layering),

(partitioning)

Path : VP) 가 (Virtual Channel : VC) . ATM 가 (Virtual VC

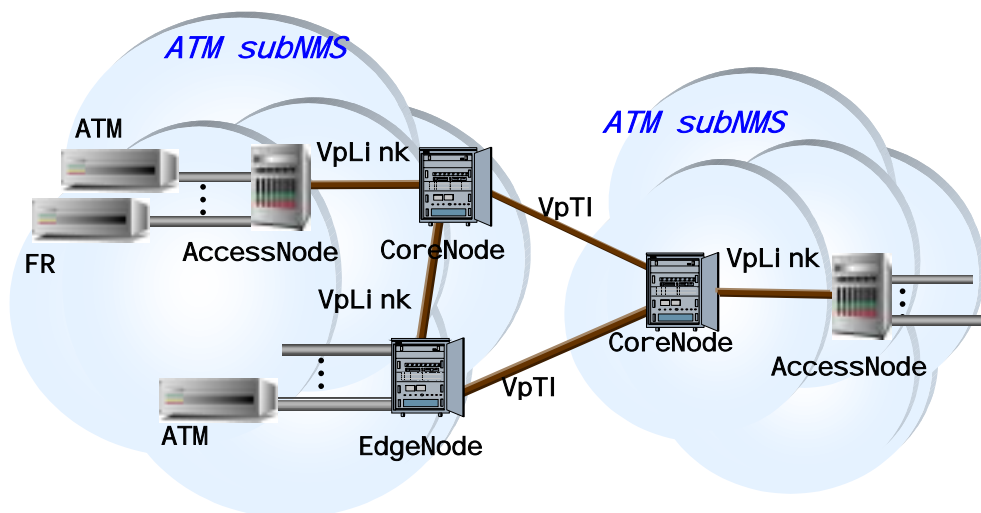
NMS subNMS[9] , subNMS 가 1  
 가 NMS 가 (hierarchical) 가  
 가 NMS

[10]

III.1

( ), ( , CAC ) ,  
 ( ), ( )

### III.1 ATM



1 . ATM

1 ATM [11]

가 ATM 가 VP VC (VpLnw) VC (VcLnw)  
 VpLnw, VcLnw VP VC (Snw) Snw  
 subNMS 가 2

2 .

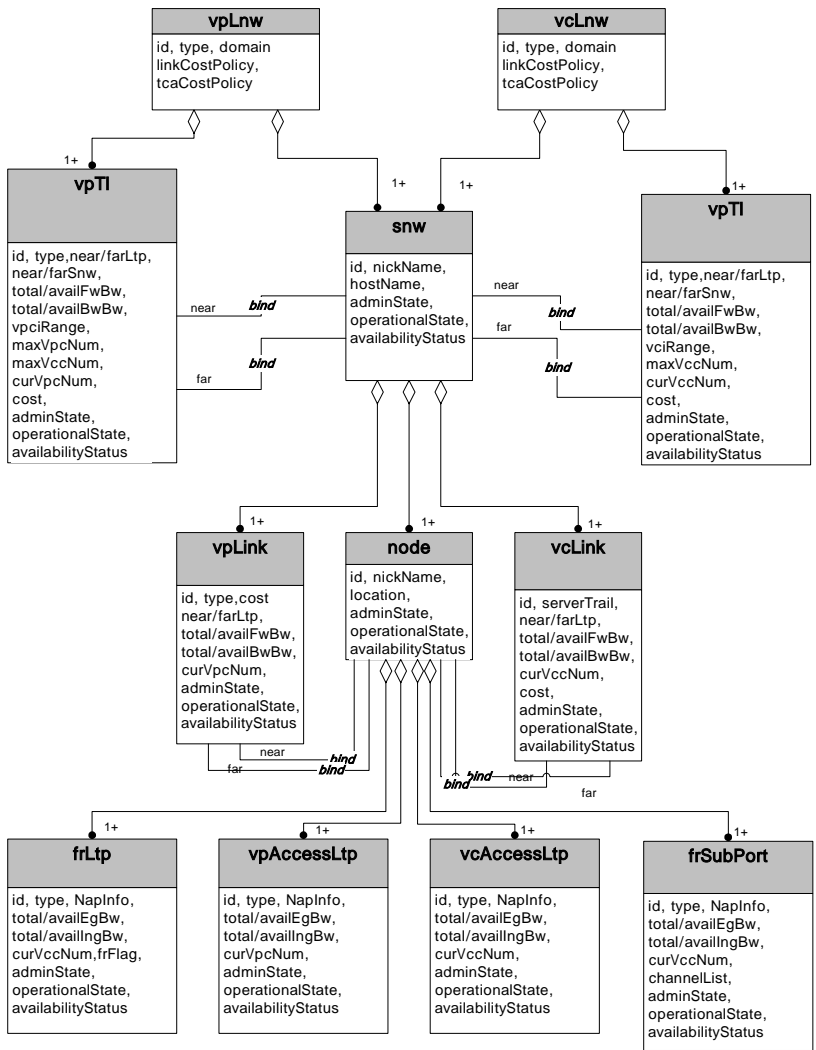
VpLnw	✓ ✓ VP ✓	✓ VP
VcLnw	✓ ✓ VC ✓	✓ VC
Snw	✓ ✓ (ATM subNMS, DSLAM EMS, ...) ✓	✓

(topology) 가 (access), (core), 가  
(edge) (node)  
, snw snw subNMS 가 snw NMS 가  
Topological Link), VcTI snw VpLink, VcLink VpTI (VP  
3

3 .

Node	✓ ✓ ✓ ✓	✓ ✓ (Administrative state)
VpTI	✓ ✓ VPI/VCI ✓ ✓ ✓	✓ ✓ (Connection Admission Control) CAC ✓
VcTI	✓ ✓ VCI VPI ✓ ✓ ✓	✓ ✓ CAC ✓
VpLink	✓ ✓ ✓ ✓	✓ ✓ ✓ CAC
VcLink	✓ ✓ VPI	✓ ✓ CAC

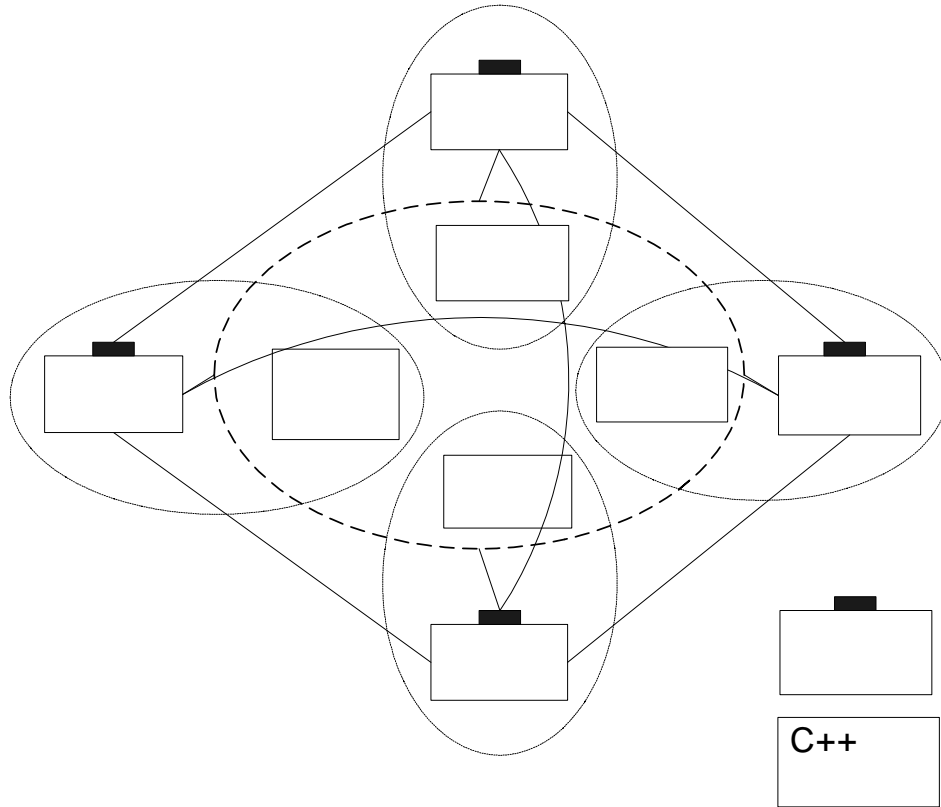




2 . ATM

III.2 ATM NMS

ATM NMS CORBA (Common Object Request Broker Architecture) ,  
 [2] , , , 4 가  
 CORBA (Manager)  
 NMS  
 3 , 가  
 NMS 3 ,  
 가



3 . ATM NMS

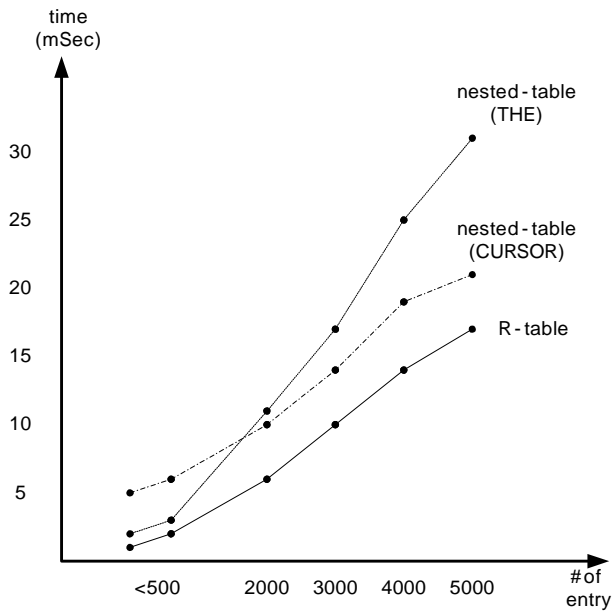
, C++ . C++

GUI . DB (schema) DB

, , 4 . 15% - 300%

가





4 . DB performance

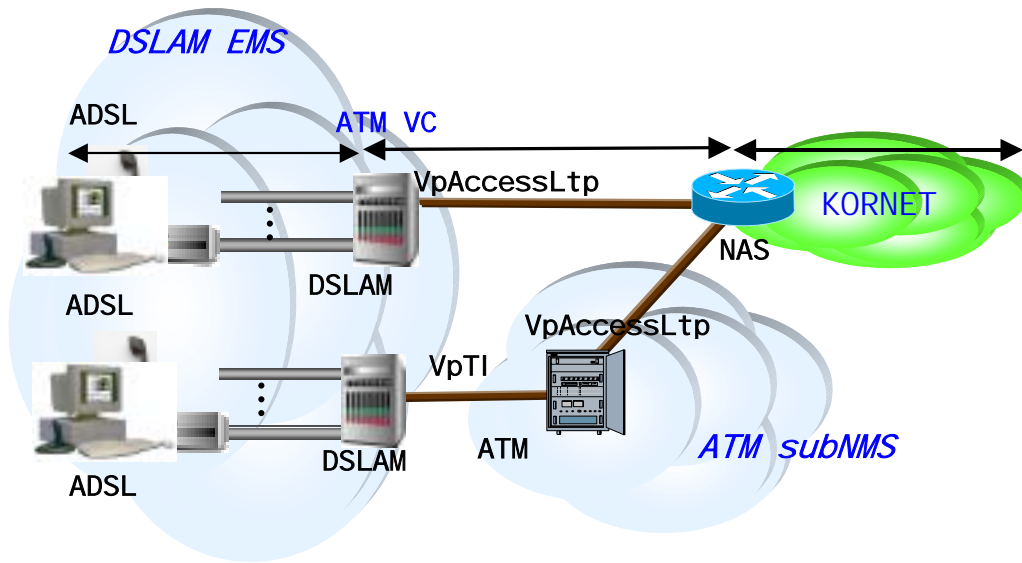
III.1

가

IV. ATM.ADSL

III ATM /가  
 ATM 가 ATM 가  
 ADSL [14],[15] ATM 가 , ADSL  
 [16].  
 ATM NMS ATM NMS 가  
 ADSL 가 NMS ADSL [14],[17] 가 가  
 , IV.1 ADSL  
 , IV.2 ATM.ADSL NMS

IV.1 ATM.ADSL



5 . ADSL

ADSL 5 . 5 3 ATM  
 DSLAM EMS DSLAM(Digital Subscriber Line Access Multiplexer) subNMS  
 Snw , subNMS NML(Network Management Layer)  
 Layer) , DSLAM EMS DSLAM EML(Element Management  
 DSLAM ATM VpLink, VcLink . ADSL  
 node . DSLAM ATM 가  
 VpTI VcTI 가 , IP node 가 snw  
 Server)가 가 DSLAM ATM NAS (Network Access  
 NAS NAS  
 FrLtp, FrSubPort ADSL VpAccessLtp  
 DSLAM EMS  
 5 .

5 . ATM ADSL

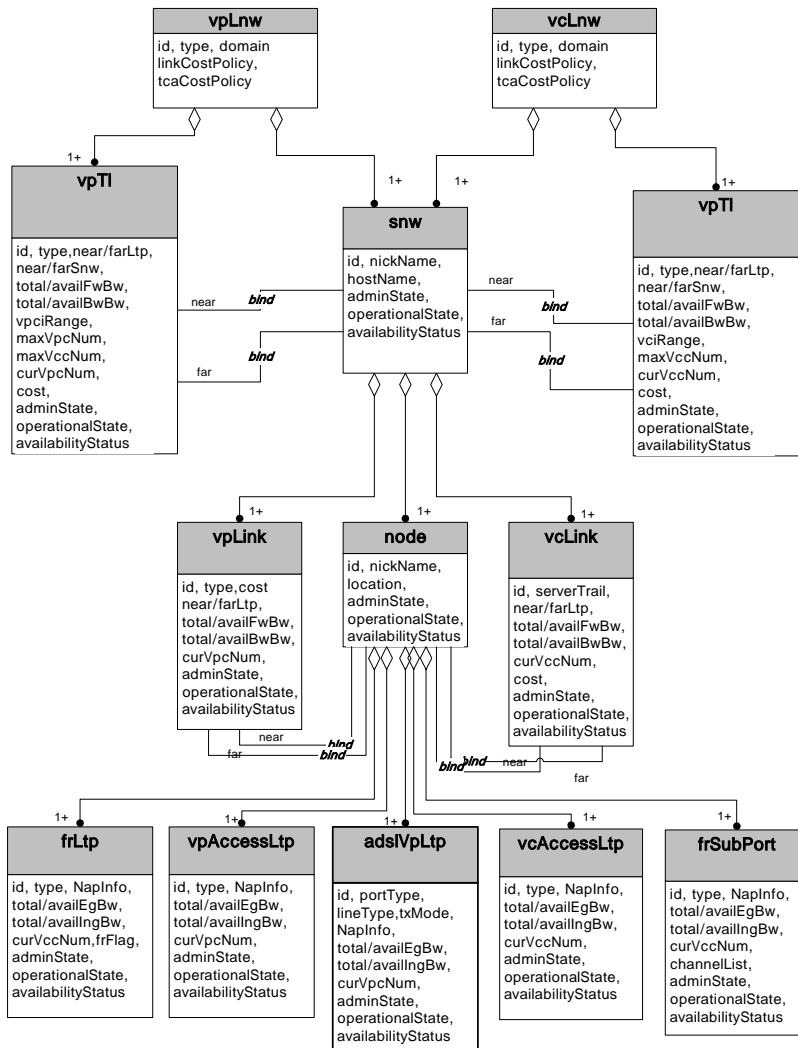
	ATM	ADSL	가
Snw	SubNMS	DSLAM EMS	가
Node	ATM	DSLAM	가
VpTI, VcTI	Snw	ATM -DSLAM	가
VpLink, VcLink	Snw		
VpAccessLtp	가	NAS DSLAM	가
VcAccessLtp	VC 가	VC	가
FrLtp, FrSubPort	FR		

가 ADSL ATM VP/VC ATM VpAccessLtp FR FrLtp, FrSubPort  
 ATU-C/R(ADSL Tranceiver Unit – Central office / Remote)  
 ADSL (Line Configuration Profile)  
 ATM (Line Alarm Configuration Profile)[17]  
 ATU-C ADSL LineProfile ID, LineAlarmProfile ID,  
 (lineType), (lineCode), (transmissionMode)[17] 가 AdslVpLtp  
 AdslAlarmProfile AdslLineProfile 가  
 6

6 . 가

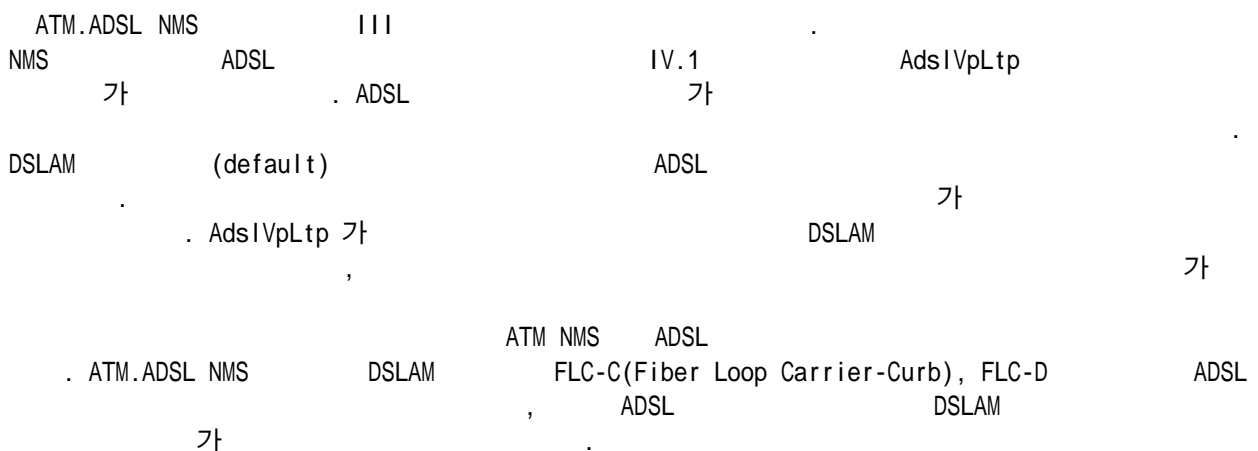
AdslVpLtp	✓ ✓ 가 , ✓ , ✓ , ✓ ,	✓ , , ✓ CAC ✓
AdslLineProfile	✓ ADSL	✓ ,
AdslAlarmProfile	✓ ADSL	✓ ,

가 VC 가 ATU-R VP . VC AdslVpLtp 가 AdslVpLtp 가 VcAccessLtp  
 가 ATM 가  
 가 ADSL 가 6



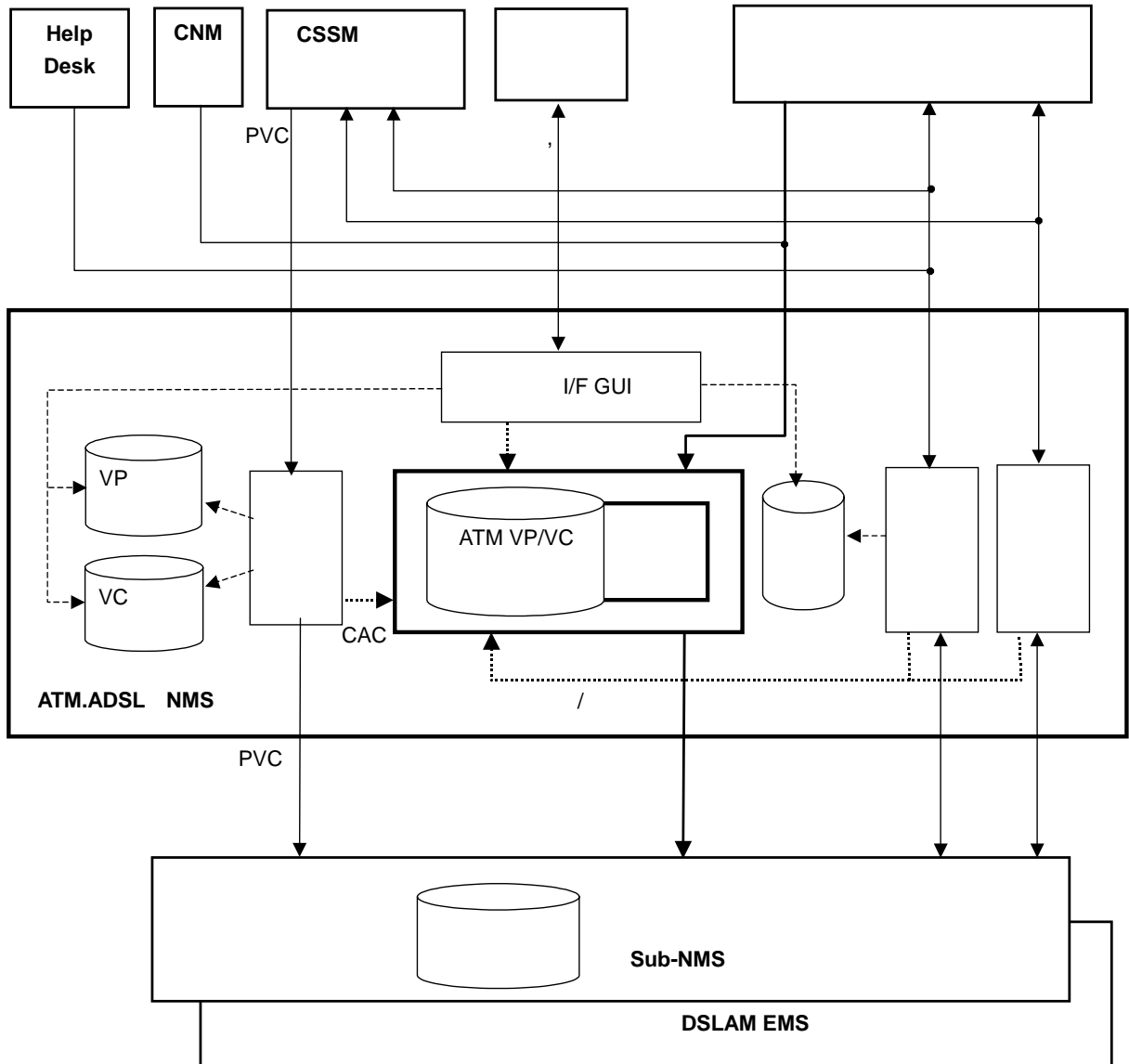
6 . ATM.ADSL

IV.2 ATM.ADSL NMS



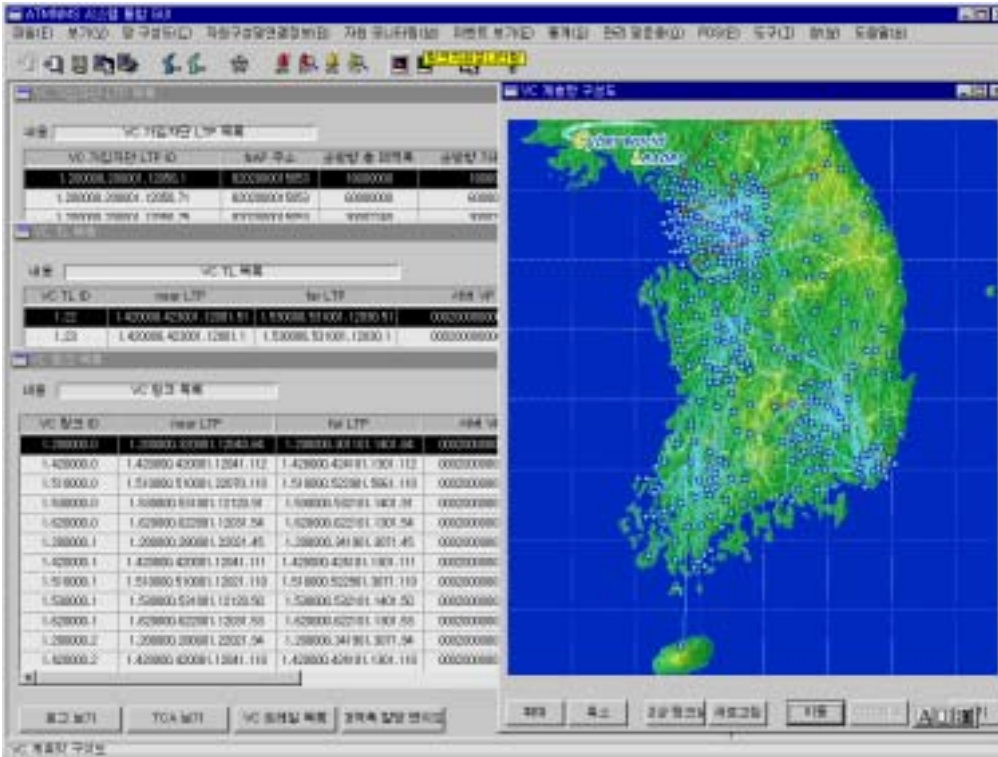
V. ATM.ADSL NMS

ATM.ADSL NMS 2001 3 14 270 가  
 1 가 , 500 ADSL 가 DSLAM EMS  
 DSLAM EMS NMS SML(Service Management Layer) , SubNMS , SubNMS  
 7 ADSL , NMS 5 SubNMS  
 NMS 21 DSLAM EMS 가



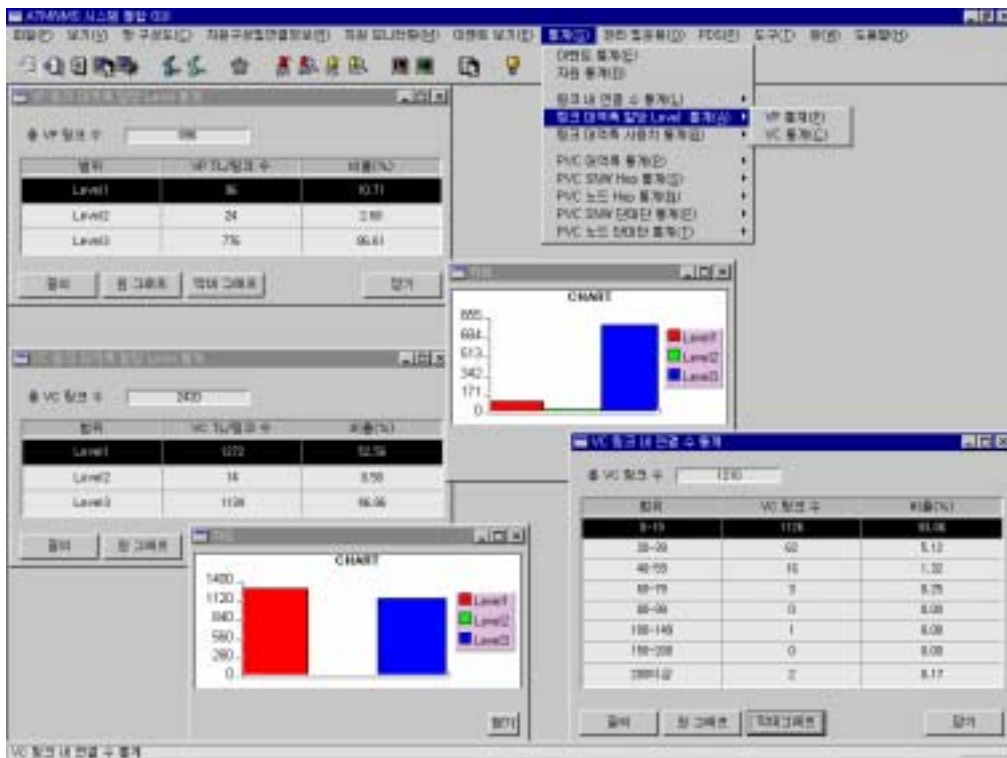
7 . NMS

8 VC . GUI III 가 VcTI VI , 가 VcLink

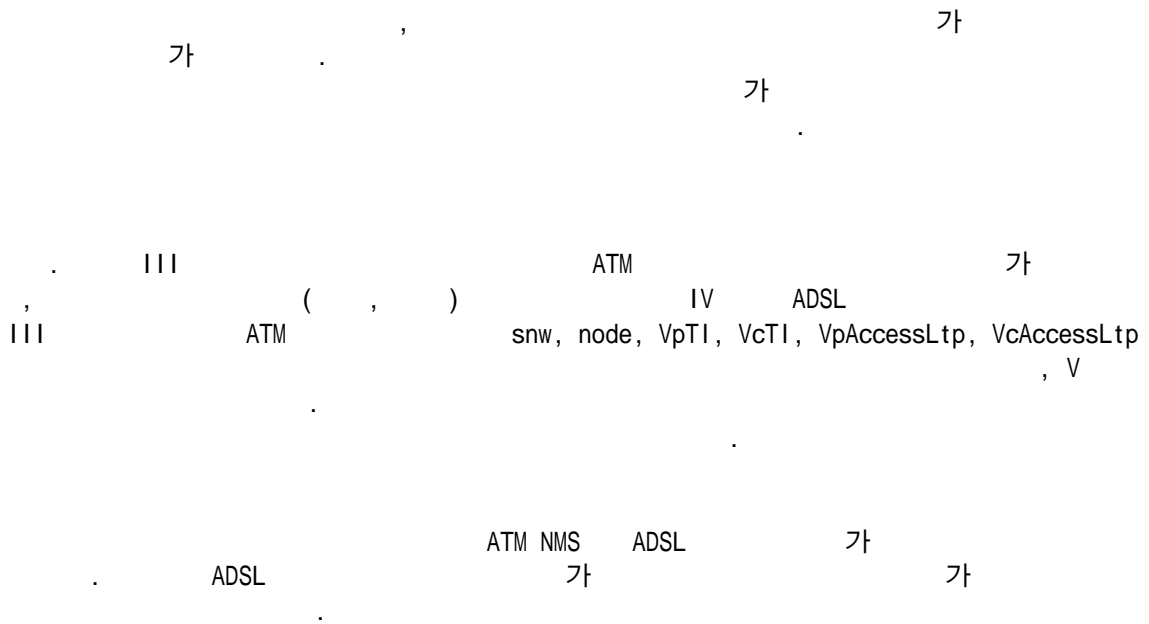


8. ATM.ADSL NMS GUI 1

9 VP/VC 가 가



VI.



[            ]

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