

UTStarcom MSPP 소개자료

MSPP- Series

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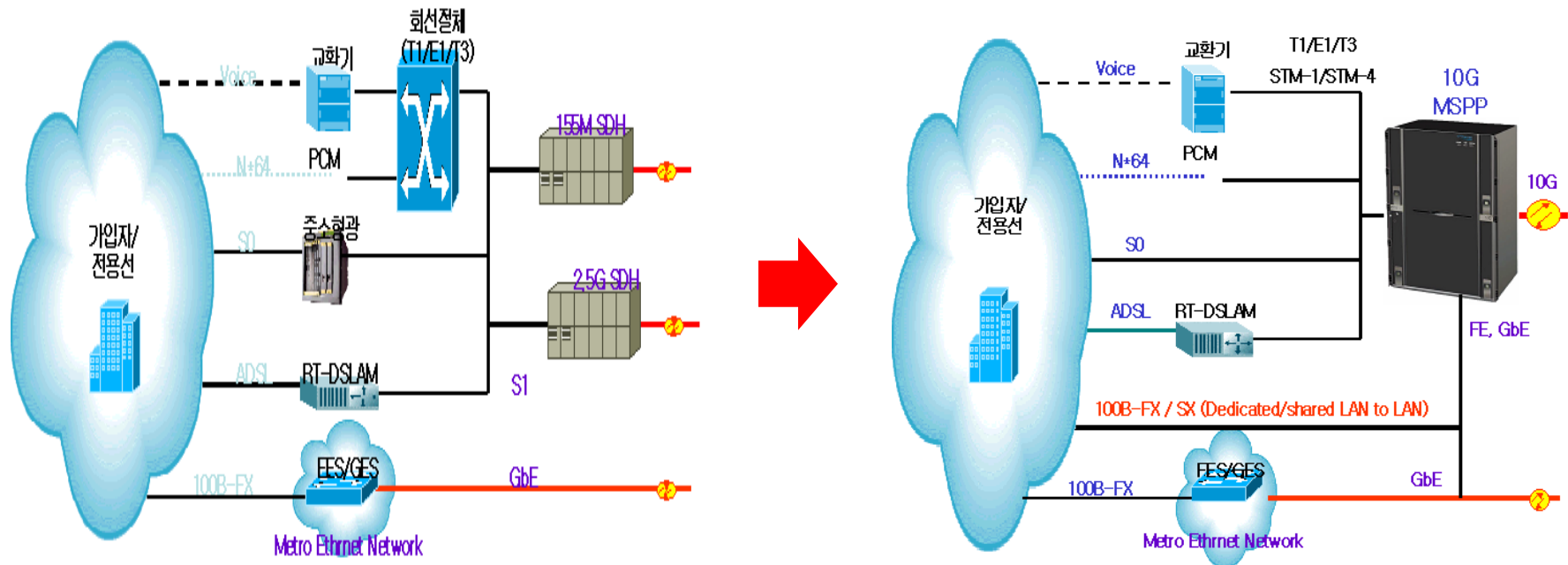
MSPP 개요 및 기능

- TDM과 Ethernet Over SDH에 의한 QoS 인터넷 접속 서비스 동시 제공
- L2 Switch / Aggregation 기능
- TSI (Time Slot Interchange)을 통한 Cross-Connect 기능 → ADM & DCS
- 기존 SDH 전송 망 인프라를 그대로 이용하면서 Metro Ethernet 서비스제공
- 하나의 장비에서 다중서비스 지원으로 비용 및 공간절감 효과
- 시,군,구에서 사용하는 데이터망과 음성 장비를 유연하게 연동
- Ethernet Ring Service인 RPR COS (Class of Service) 기능에 의한 Burst Data Traffic에 대한 효율적인 SDH Bandwidth 사용 기능.

1. MSPP 소개

MSPP 적용방안

- Multi-service Provisioning Platform (MSPP) 장치는 기존의 다양한 장치에서 제공 하던 서비스를 하나의 Platform에서 공급함으로써, 장비 설비비와 유지보수 비용 절감 효과.
- TDM solutions DS-1, DS-1E, DS-3, data solutions 10/100/1000 Ethernet 신호 STM-1 to STM-64 광 전송기능 및 Ethernet Ring service인 RPR 기능을 제공.

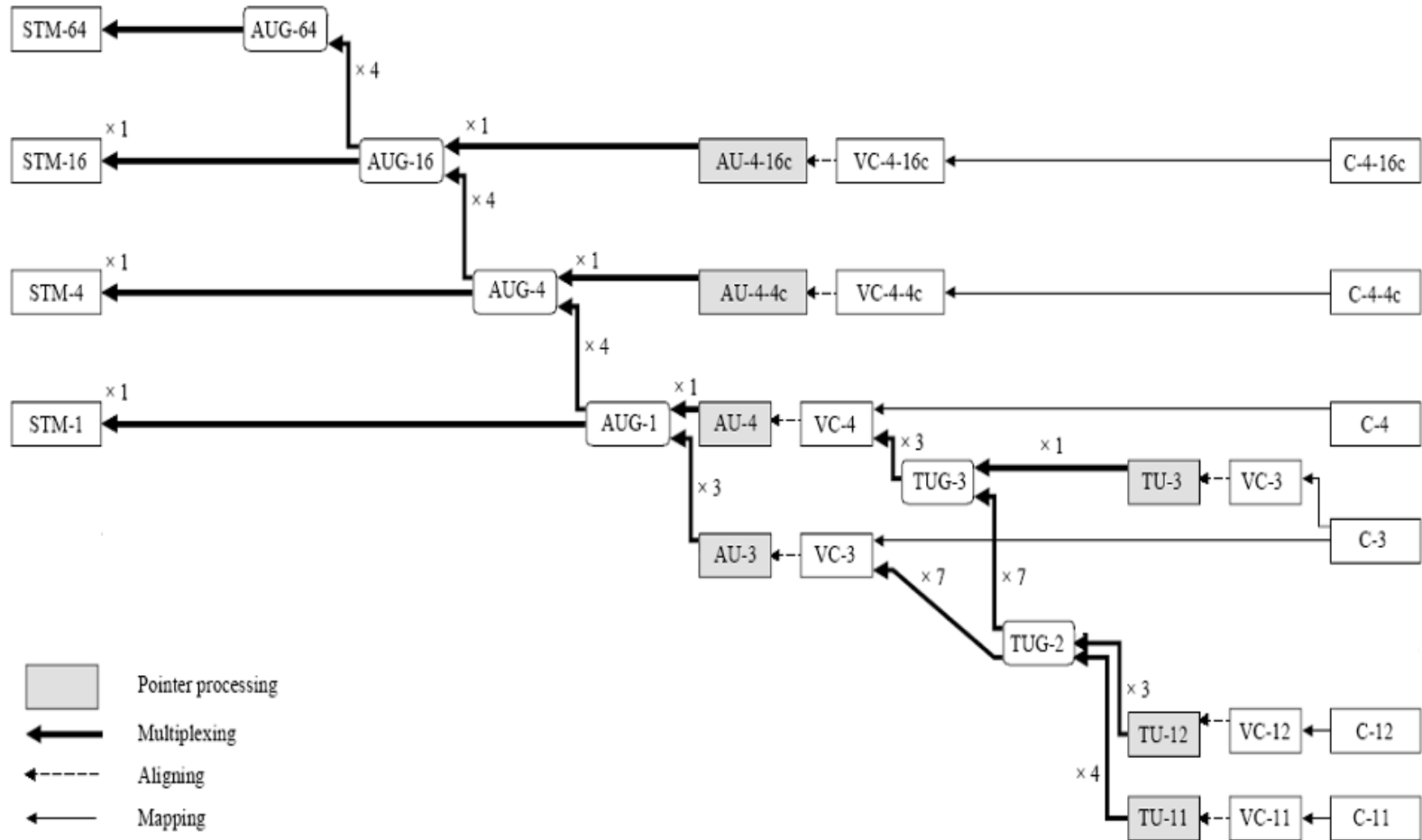


MSPP 특징

- * **SDH, PDH 및 Ethernet(FE,GE)등 다양한 인터페이스 제공**
 - STM-1/4/16/64
 - DS-1/1E/3
 - Gigabit Ethernet , Fast Ethernet(FX/TX)
- * **다양한 망구성 가능**
 - Point to Point
 - RING (SNCP / MS-SPRING)
 - Multi Ring
 - Subtending Ring
- * **EoS(Ethernet over SDH)**
 - Vcat(Virtual Concatenation) ITU-T G.707
 - GFP(Generic Framing Proceudre) ITU-T G.7041
 - LCAS(Link Capacity Adjustment Scheme) ITU-T G.7042
- * **RPR(Resilient Packet Ring)**
 - Compliant with IEEE 802.17
 - 공정성(Fairness Algorithm)
 - Resilience 50ms 이내의 보호
 - CoS(Class of Service)
 - Ringlet 최대 Bandwidth 2.5G 지원(Total : 5G bandwidth 제공)
 - 공간 재사용(Spatial Reuse)

1. MSPP 소개

MSPP 다중화 계위

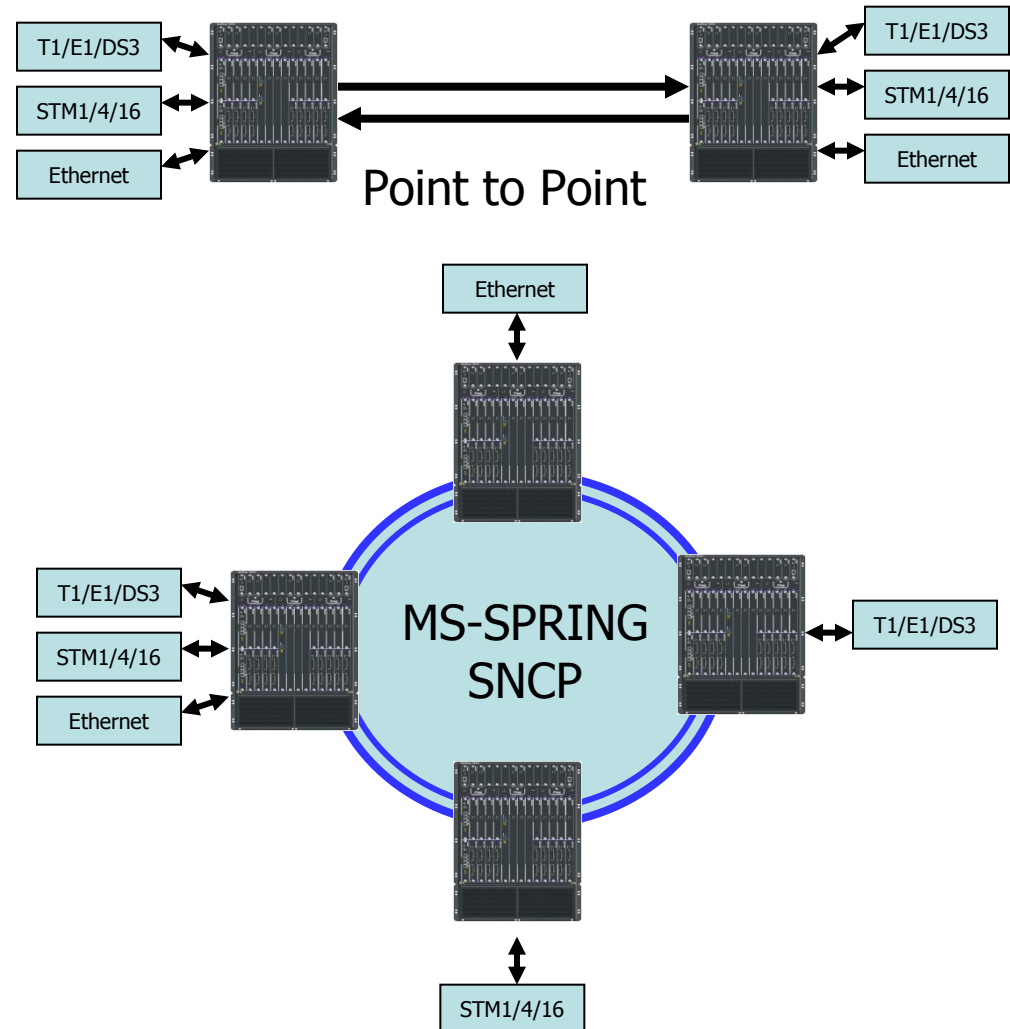


1. MSPP 소개

MSPP Topology

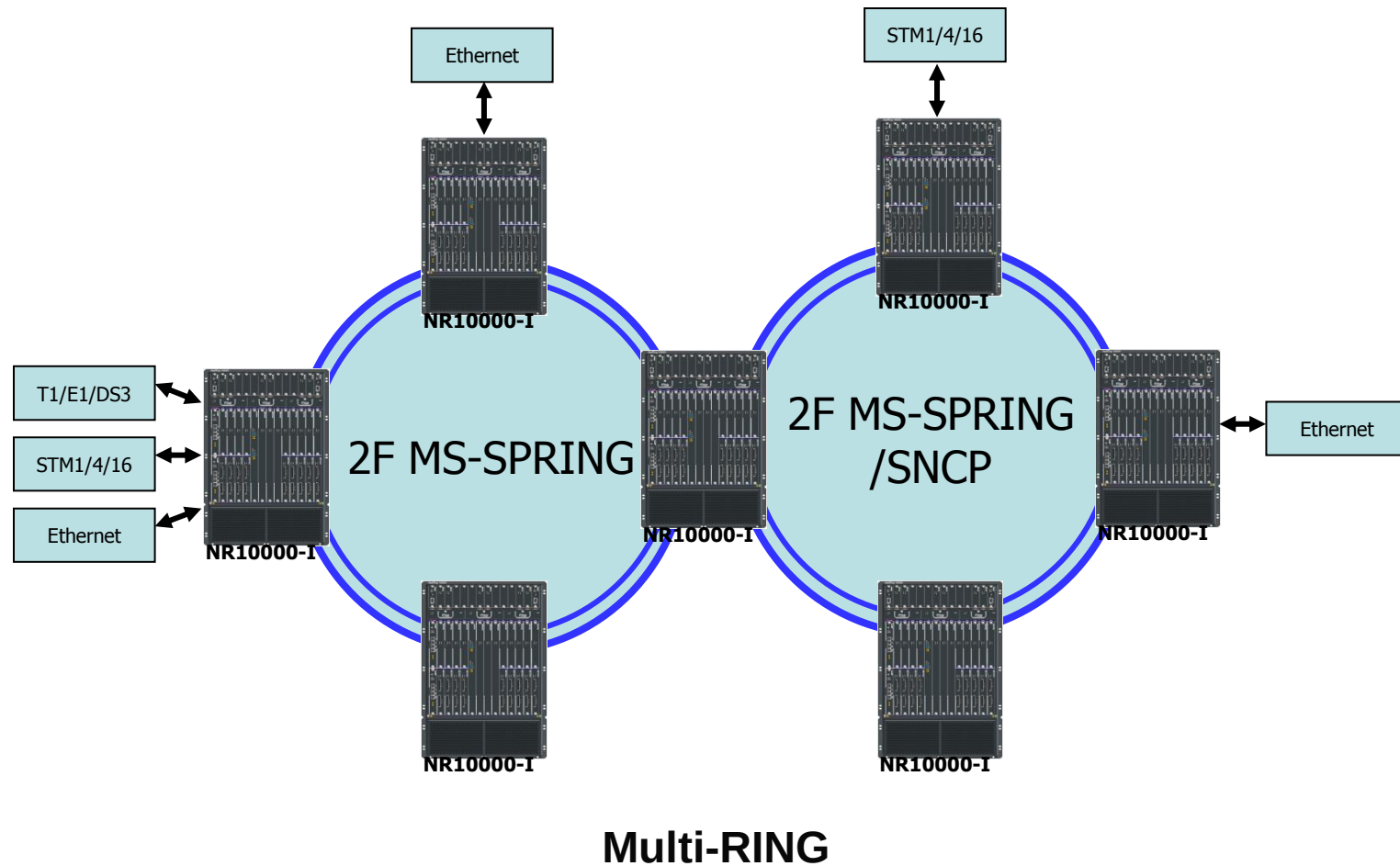
망 구조 :

- Point to Point
- Ring
 - 1) SNCP
 - 2) 2F - MSSPRING
- Multi Ring
- Subtending Ring



1. MSPP 소개

MSPP Topology



1. MSPP 소개

2. UTStarcom 장비 소개

2-1 NR40K

2-2 NR10K

2-3 NR 2500

2-4 NR 1000

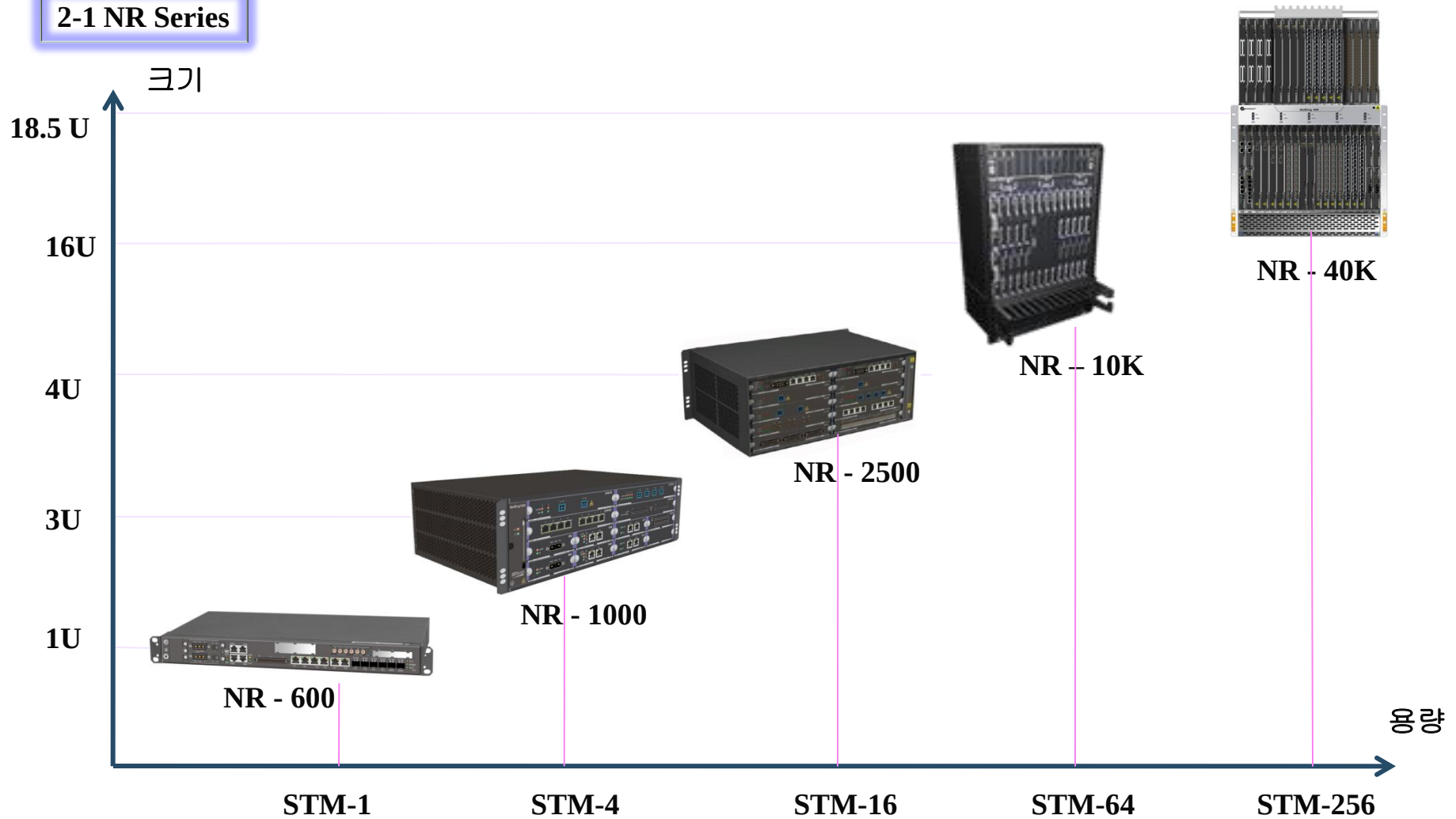
2-5 NR 600

3. 구축사례

4. 기타

2. UTStarcom MSPP 장비소개

2-1 NR Series



2. UTStarcom MSPP 장비소개



2-1 NR 40K

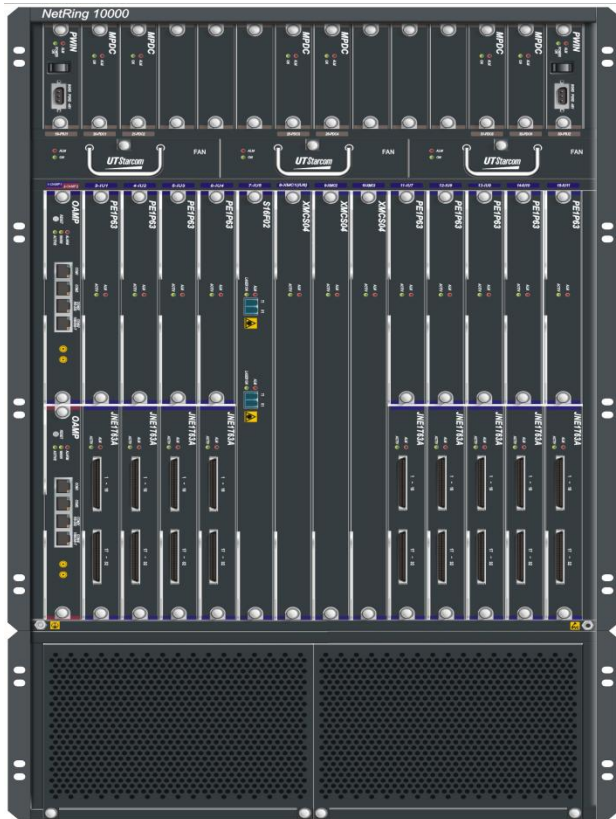


HARDWARE

- DIMENSIONS 866 (H) × 280 (D) × 535 (W) (mm)
- WEIGHT Maximum 100Kg
- TEMPERATURE 50 to 400C
- POWER SUPPLY -48VDC, -38V to -71V Operating Range
- POWER CONSUMPTION 1300W fully loaded
- COMPLIANCE FCC Part 15 Subpart B, VCCI, CE (EMC and LVD) Latest ITU-T Standard. Telcordia
- GR-253-CORE, IEEE802.3, 802.3u/z/ad;
802.1/q/p/d/s/w, 802.17, 802.3x, ROHS5
- HUMIDITY 5%RH~85%RH@300C

2. UTStarcom MSPP 장비소개

2-2 NR 10K



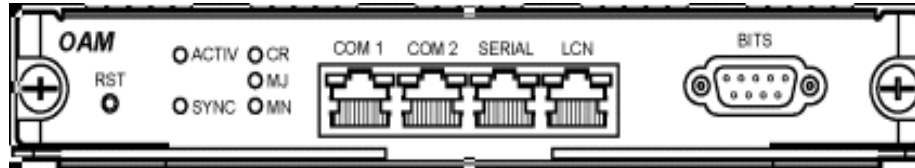
HARDWARE

- SYSTEM CHASSIS
- DIMENSIONS 710 x 436 x 281mm (HxWxD)
- WEIGHT 43Kg
- TEMPERATURE 0° TO 40° C
- POWER – 48VDC, –40V ~ –69V Operating Range
- POWER CONSUMPTION 535W fully loaded
- COMPLIANCE FCC Part 15 Class A, UL1950, CE,
Latest ITU-T Standard. Telcordia GR-253-CORE,
- IEEE802.3, 802.3u/z/ad; 802.1/q/p/d/s/w, 802.17, 802.3x
- HUMIDITY 10 TO 95% non-condensing

2. UTStarcom MSPP 장비소개

2-2 NR 10K – Unit (OAM)

외부 형상



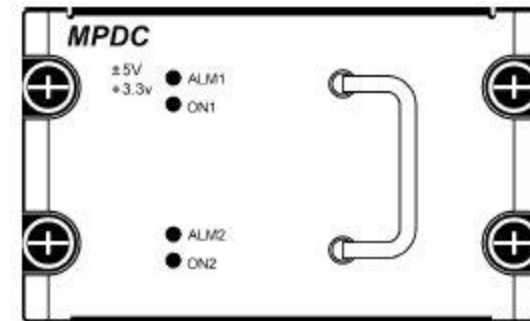
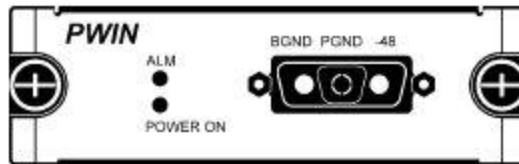
OAM card

- * Main Control function
 - System Operation , Administration & Management
 - PM collection
 - Manage the system configuration data
 - Manage the Alarm
 - ECC Processing (OAMP IP-2ea, Shelf IP, DCC IP 설정)
- * Real time Clock function
 - Operation modes :
 - Lock Mode : external or received clock
 - Holdover Mode : maintained 72 hours
 - Free-run Mode : Accuracy $\pm 4.6\text{ppm}$
 - 2 external clock input(2Mbps)
 - 2 derived out(2Mbps)
 - Support SSM byte and S1 byte
 - SSM byte is higher than priority of Source Interface

2. UTStarcom MSPP 장비소개

2-2 NR 10K – Unit (PWIN / MPDC)

외부 형상



PWIN card

- ★ Main Power Unit
- 시스템에 -48전원 공급 유닛
- 시스템당 2개의 유닛 장착으로 이중화 구현

MPDC card

- DC-DC 변환 유닛
- 시스템당 3개의 유닛 장착

2. UTStarcom MSPP 장비소개

2-2 NR 10K – Unit (XMCS08)

외부 형상



XMCS08 (Cross-connect card)

- * 80G Cross-connect card
- * Non Blocking Switching including VC4, VC3, VC12 and VC11
- * High Order 80G
 - VC4 512 x 512
 - VC3 1536 x 1536
- * Low Order 7.5G
 - VC12 3024 x 3024
 - VC11 4032 x 4032
- * Support 1+1 card level protection
- * 가용 슬롯 9, 10

2. UTStarcom MSPP 장비소개

2-2 NR 10K – Unit (S64F01)

외부 형상



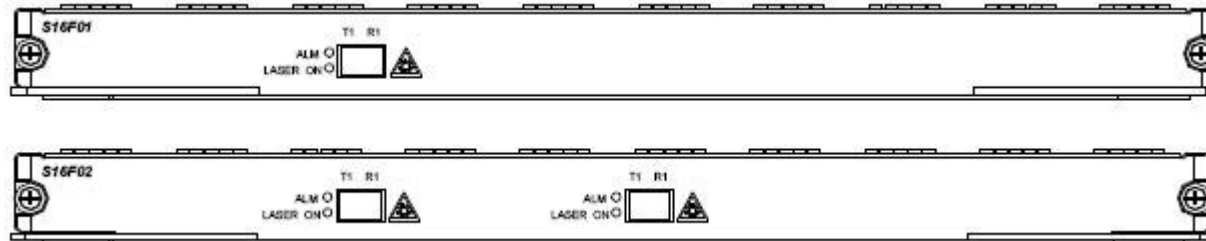
S64F01(STM-64 board)

- * STM-64 1 Port 제공
- * STM-64 신호의 다중화 및 역 다중화
- * Far-end Loop back
- * Insert in slot 7,8,11 and 12
- * Connector type : LC interface.
- * S64F01_FEC(Forward Error Correction)
 - Out of band FEC function 지원
 - 전송 속도 10.709Gbps

2. UTStarcom MSPP 장비소개

2-2 NR 10K – Unit (S16F0x)

외부 형상



S01F16 (STM-16 board)

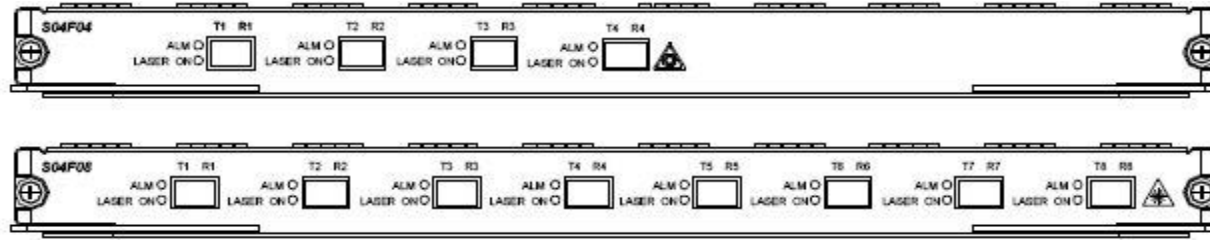
- * STM-16 다중화 및 역 다중화
- * Far-End & Near-End Loop back
- * Connector type LC interface
- * SFP(Small Form-factor Pluggable) Module type 구성으로 유지보수 용이

2. UTStarcom MSPP 장비소개

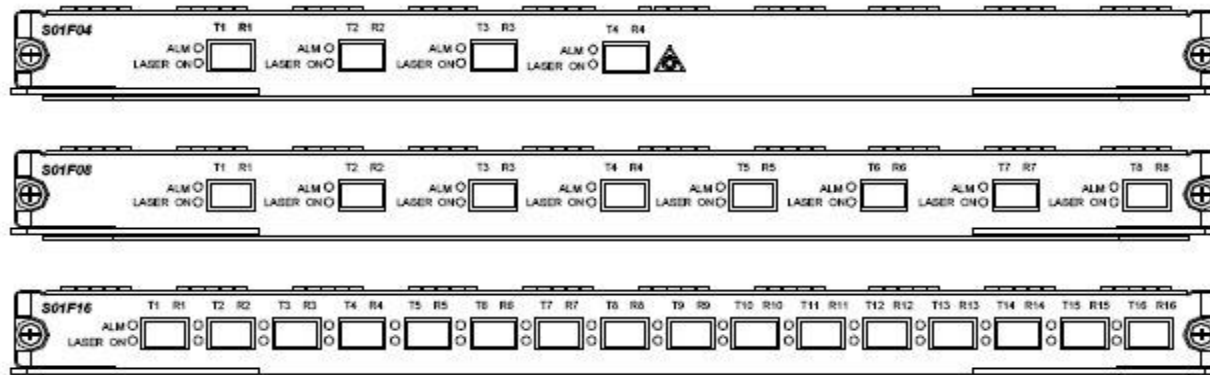
2-2 NR 10K – Unit (S04F0x / S01F0x)

외부 형상

S04F0x



S01F0x



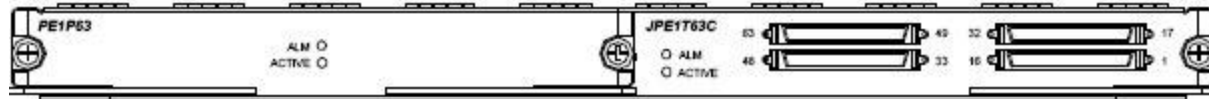
S04F0x/S01F0x (STM-4/1 board)

- * STM-4/1 다중화 및 역 다중화
- * Far-End & Near-End Loop back
- * Connector type LC interface
- * SFP(Small Form-factor Pluggable) Module type 구성으로 유지보수 용이

2. UTStarcom MSPP 장비소개

2-2 NR 10K – Unit (PE1P63)

외부 형상



PE1P63 (PDH board)

- * E1 service board
- * Dual DB68 interface
- * Protection 지원
- * Loopback 지원
- * Hot Swapping 지원

2. UTStarcom MSPP 장비소개

2-2 NR 10K – Unit (Ethernet – R16M10)

외부 형상



R16M10 (RPR + EOS board)

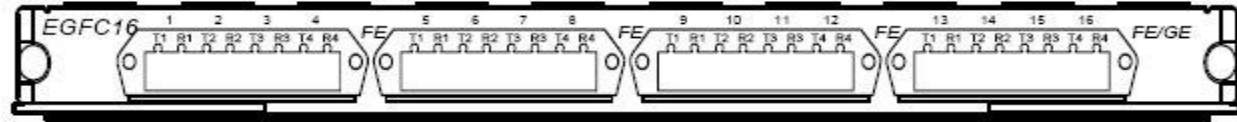
* L2 function

- 802.1q VLAN
- STP(Spanning Tree Protocol) & RSTP(Rapid Spanning Tree Protocol)
- Rate Limiting (64Kbps)
- Pause Frame
- Link aggregation (Maximum 8ea)
- Jumbo frame (9216 bytes)
- 802.1q(Q in Q)
- 8 level Packet Priority

2. UTStarcom MSPP 장비소개

2-2 NR 10K – Unit (Ethernet – EGEC16)

외부 형상



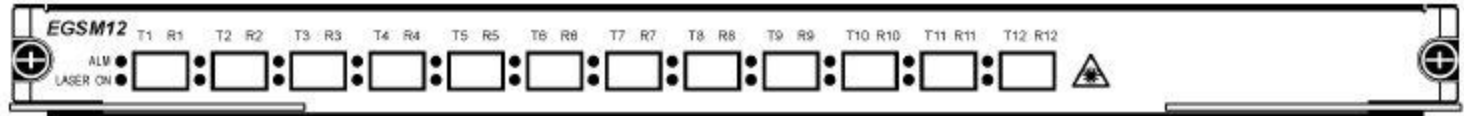
EGFC16 (EOS board)

- * 4 GE or FE(TX or FX) + 12 FE(TX or FX)
 - Group 1~3 : FE 전용 (selectable TX/FX)
 - Group 4 : selectable GE/FE (TX/FX) – change the Dip S/W
- * 24 Wan Ports (Wan Port = 100Mbps)
 - * GFP-F and LCAS
- * L2 Function
 - 802.1q VLAN
 - STP(Spanning Tree Protocol) & RSTP(Rapid Spanning Tree Protocol)
 - Rate Limiting (64Kbps)
 - Pause Frame
 - Link aggregation (Maximum 8ea)
 - Jumbo frame (9216 bytes)
 - 802.1q(Q in Q)
 - 8 level Packet Priority

2. UTStarcom MSPP 장비소개

2-2 NR 10K – Unit (Ethernet – EGSM12)

외부 형상



EGSM12 (EOS board)

- * 12 GE

- * 10 Wan Ports (Wan Port = 1000Mbps)

- * GFP-F and LCAS

- * L2 Function

- 802.1q VLAN

- STP(Spanning Tree Protocol) & RSTP(Rapid Spanning Tree Protocol)

- Rate Limiting (64Kbps)

- Pause Frame

- Link aggregation (Maximum 8ea)

- Jumbo frame (9216 bytes)

- 802.1q(Q in Q)

2. UTStarcom MSPP 장비소개



2-3 NR 2500



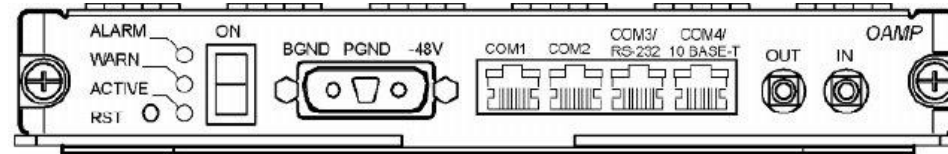
HARDWARE

- 4U high compact 19" rack-mountable chassis
- DIMENSIONS 175 x 436 x 300mm (HxWxD)
- WEIGHT 9 Kg
- TEMPERATURE 0° TO 40° C
- POWER – 48VDC, –40V ~ –69V Operating Range
- POWER CONSUMPTION 535W fully loaded

2. UTStarcom MSPP 장비소개

2-3 NR 2500 – Unit(OAMP)

외부 형상



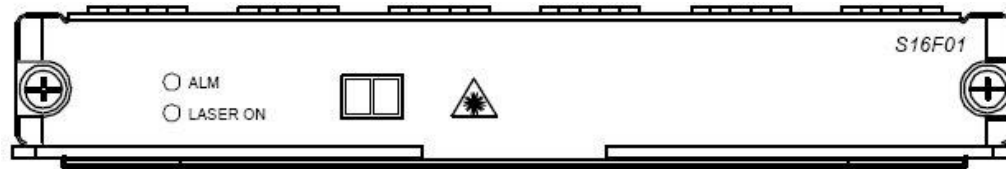
OAM card

- * Main Control function
 - System Operation , Administration & Management
 - PM collection
 - Manage the system configuration data
 - Manage the Alarm
 - ECC Processing (OAMP IP-2ea, Shelf IP, DCC IP 설정)
- * Real time Clock function
 - Operation modes :
 - Lock Mode : external or received clock
 - Holdover Mode : maintained 72 hours
 - Free-run Mode : Accuracy $\pm 4.6\text{ppm}$
 - 2 external clock input(2Mbps)
- * DC Power function

2. UTStarcom MSPP 장비소개

2-3 NR 2500 – Unit(S16F01)

외부 형상



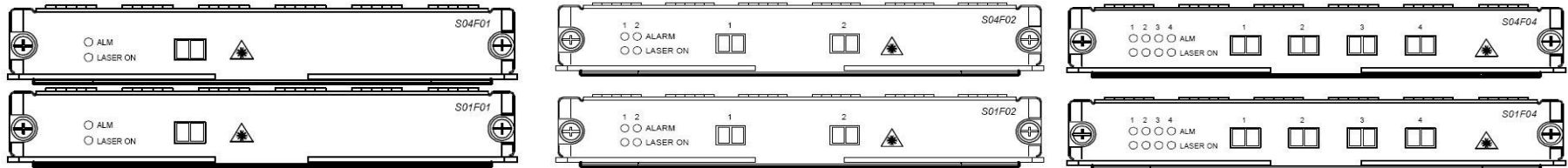
S01F16 (STM-16 board)

- * STM-16 다중화 및 역 다중화
- * 64 x 64 VC4 High order cross-connect
- * 1008 x 1008 VC12 Low order cross-connect
- * Far-End & Near-End Loop back
- * Connector type LC interface
- * SFP(Small Form-factor Pluggable) Module type 구성으로 유지보수 용이

2. UTStarcom MSPP 장비소개

2-3 NR 2500 – Unit(S04F0x / S01F0x)

외부 형상



S01F4/1 (STM-4/1 board)

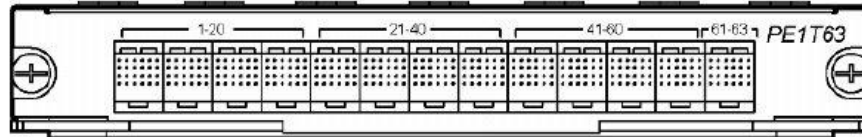
- * STM-4/1 다중화 및 역 다중화
- * 보드별 1, 2, 4 port지원
- * Far-End & Near-End Loop back
- * Connector type LC interface
- * SFP(Small Form-factor Pluggable) Module type 구성으로 유지보수 용이

2. UTStarcom MSPP 장비소개

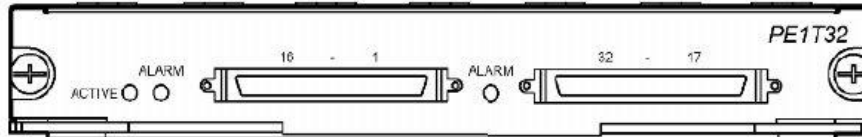
2-3 NR 2500 – Unit(PE1Txx)

외부 형상

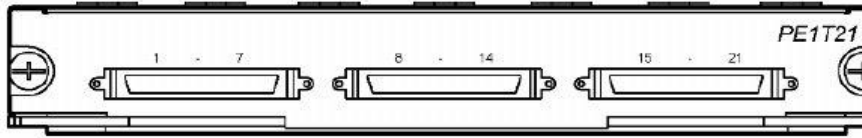
PE1T63



PE1T32



PE1T21



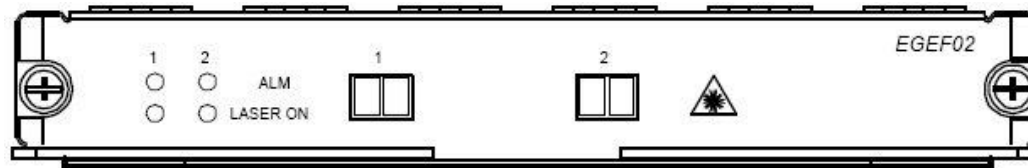
PE1T32 (PDH board)

- * E1 service board
- * DB68 Connector interface
- * Loopback 지원
- * Hot Swapping 지원
- * board 종류에 따라서 21, 32, 63 개의 E1 포트 제공

2. UTStarcom MSPP 장비소개

2-3 NR 2500 – Unit(EGEF02)

외부 형상



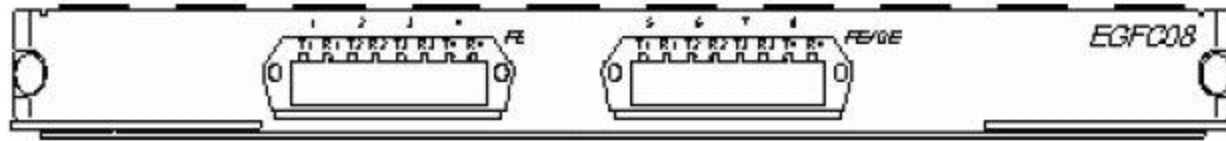
EGFC16 (EOS board)

- * 2 GE Port 제공
- * GFP-F and LCAS
- * L2 Function
 - 투명하게 이더넷 프레임 전송 기능 수행

2. UTStarcom MSPP 장비소개

2-3 NR 2500 – Unit(EGEC08)

외부 형상



EGFC08 (EOS board)

- * 8 FE(TX or FX) or 4 FE(TX or FX) + 4 GE
 - * 24 Wan Ports (Wan Port = 100Mbps)
 - * GFP-F and LCAS
- * L2 Function
 - 802.1q VLAN
 - STP(Spanning Tree Protocol) & RSTP(Rapid Spanning Tree Protocol)
 - Rate Limiting (64Kbps)
 - Pause Frame
 - Link aggregation (Maximum 8ea)
 - Jumbo frame (9216 bytes)
 - 802.1q(Q in Q)
 - 8 level Packet Priority

2. UTStarcom MSPP 장비소개

2-4 NR 1000



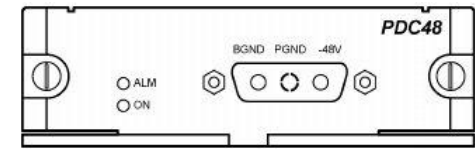
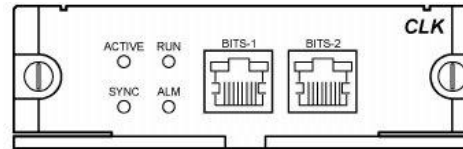
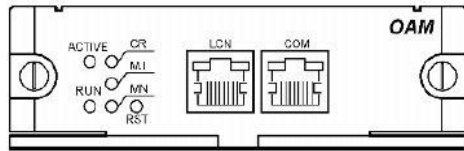
HARDWARE

- 3U high compact 19" rack-mountable chassis
- 132mm×442mm×280mm (H×W×D)
- DC power modules
- 12 slots with 8 traffic slots
- 80x80 VC-4 HO CC and 1008x1008 VC-12 LO CC

2. UTStarcom MSPP 장비소개

2-4 NR 1000 Unit(OAM / CLK / PDC48)

외부 형상



OAM card

- * Main Control function
 - System Operation , Administration & Management
 - ECC Processing (OAMP IP-2ea, Shelf IP, DCC IP 설정)

CLK card

- * 시스템 클럭 유니트

PDC 48

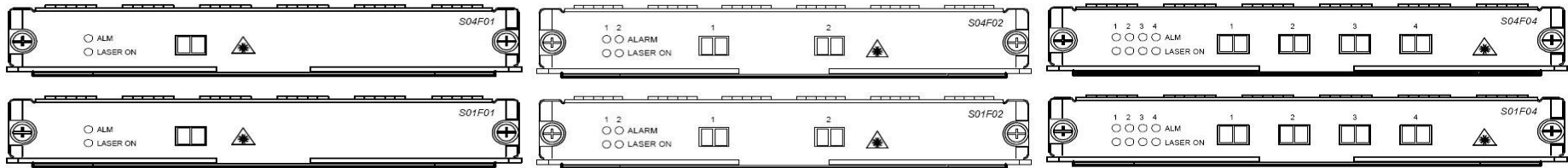
- * 시스템 전원 공급 유니트

위 3가지의 유니트는 모두 시스템당 2장 할당하여 이중화 구현

2. UTStarcom MSPP 장비소개

2-4 NR 1000 Unit(S04F0x / S01F0x)

외부 형상



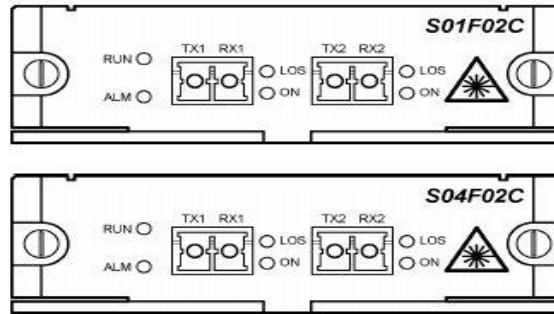
S01F04/01 (STM-4/1 board)

- * STM-4/1 다중화 및 역 다중화
- * 보드별 1, 2, 4 port지원
- * Far-End & Near-End Loop back
- * Connector type LC interface
- * SFP(Small Form-factor Pluggable) Module type 구성으로 유지보수 용이
- * NR2500 제품과 호환 가능

2. UTStarcom MSPP 장비소개

2-4 NR 1000 Unit(S04F02 / S01F02)

외부 형상



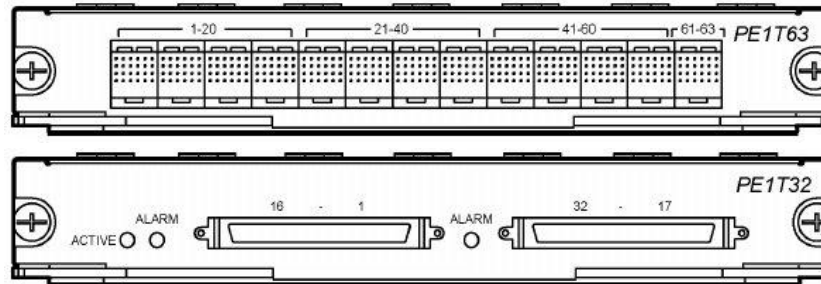
S01F04/01 (STM-4/1 board)

- * STM-4/1 다중화 및 역 다중화
- * 보드별 2 port지원
- * Far-End & Near-End Loop back
- * Connector type LC interface
- * SFP(Small Form-factor Pluggable) Module type 구성으로 유지보수 용이
- * Compact 디자인

2. UTStarcom MSPP 장비소개

2-4 NR 1000 Unit(PE1Txx)

외부 형상



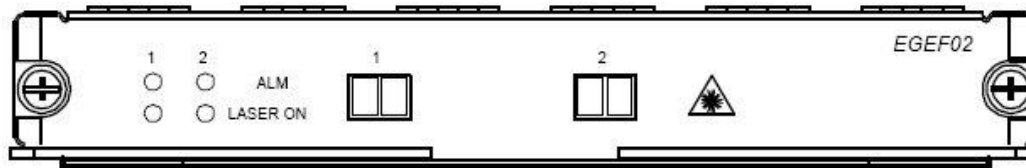
PE1Txx (PDH board)

- * E1 service board
- * DB68 Connector interface
- * Loopback 지원
- * Hot Swapping 지원
- * board 종류에 따라서 32, 63 개의 E1 포트 제공
- * NR2500 장비와 호환 가능

2. UTStarcom MSPP 장비소개

2-4 NR 1000 Unit(Ethernet – EGEF02)

외부 형상



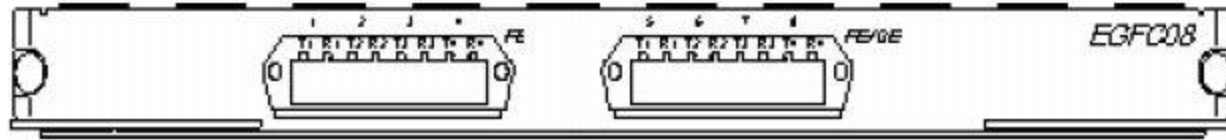
EGFC16 (EOS board)

- * 2 GE Port 제공
- * GFP-F and LCAS
- * L2 Function
 - 투명하게 이더넷 프레임 전송 기능 수행

2. UTStarcom MSPP 장비소개

2-4 NR 1000 Unit(Ethernet – EGFC08)

외부 형상



EGFC08 (EOS board)

- * 8 FE(TX or FX) or 4 FE(TX or FX) + 4 GE
 - * 24 Wan Ports (Wan Port = 100Mbps)
 - * GFP-F and LCAS
- * L2 Function
 - 802.1q VLAN
 - STP(Spanning Tree Protocol) & RSTP(Rapid Spanning Tree Protocol)
 - Rate Limiting (64Kbps)
 - Pause Frame
 - Link aggregation (Maximum 8ea)
 - Jumbo frame (9216 bytes)
 - 802.1q(Q in Q)
 - 8 level Packet Priority

2. UTStarcom MSPP 장비소개

2-5 NR 600



HARDWARE

- Dimension: 483x45x243mm W x H x D (1U)
- 19"/ETSI/ANSI rack mountable
- Typical power consumption: 20~25W
- DC power modules
- 504 x 504 VC-12 or 24 x 24 VC-3

1. MSPP 소개

2. UTStarcom 장비 소개

2-1 NR40K

2-2 NR10K

2-3 NR 2500

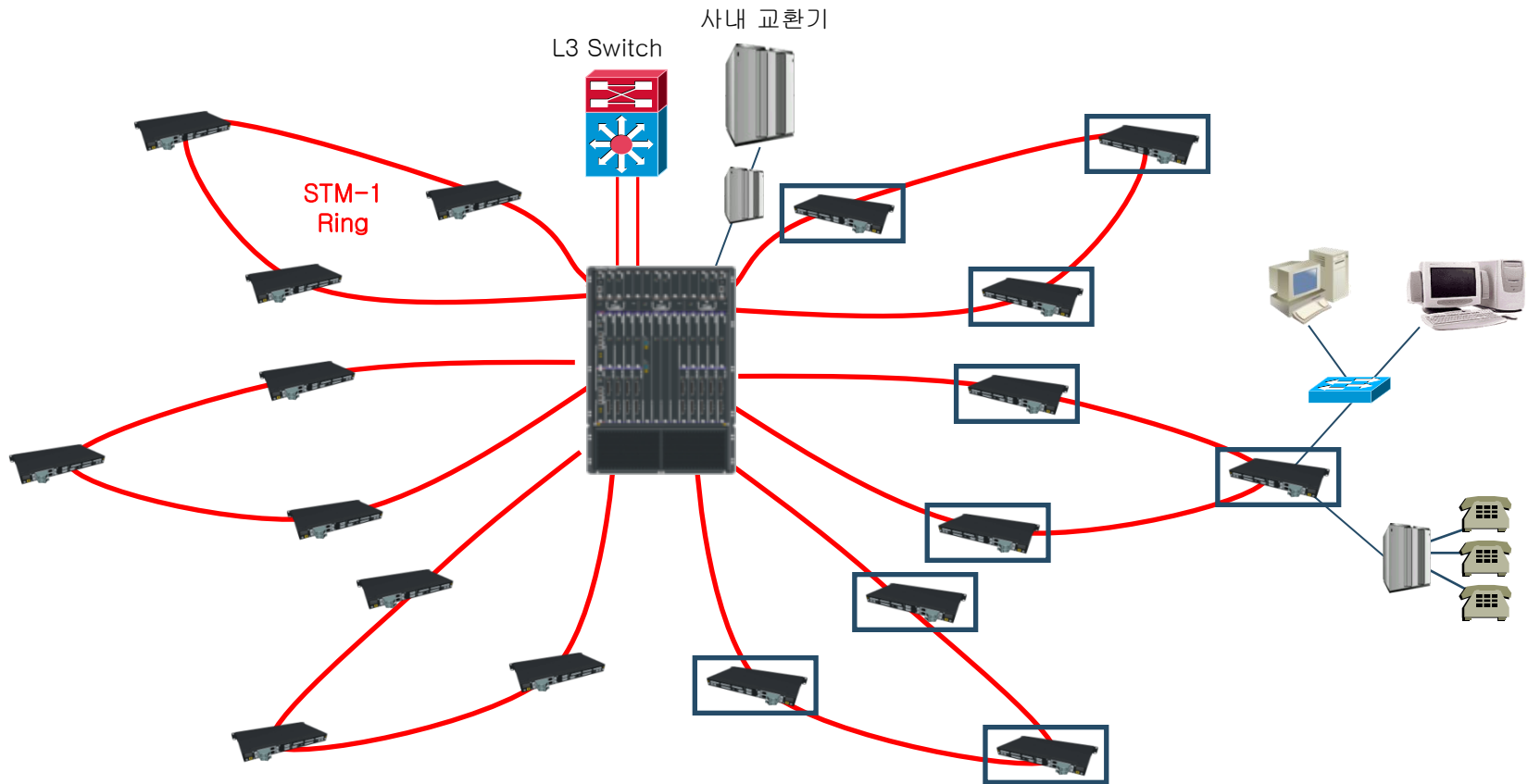
2-4 NR 1000

2-5 NR 600

3. 구축사례

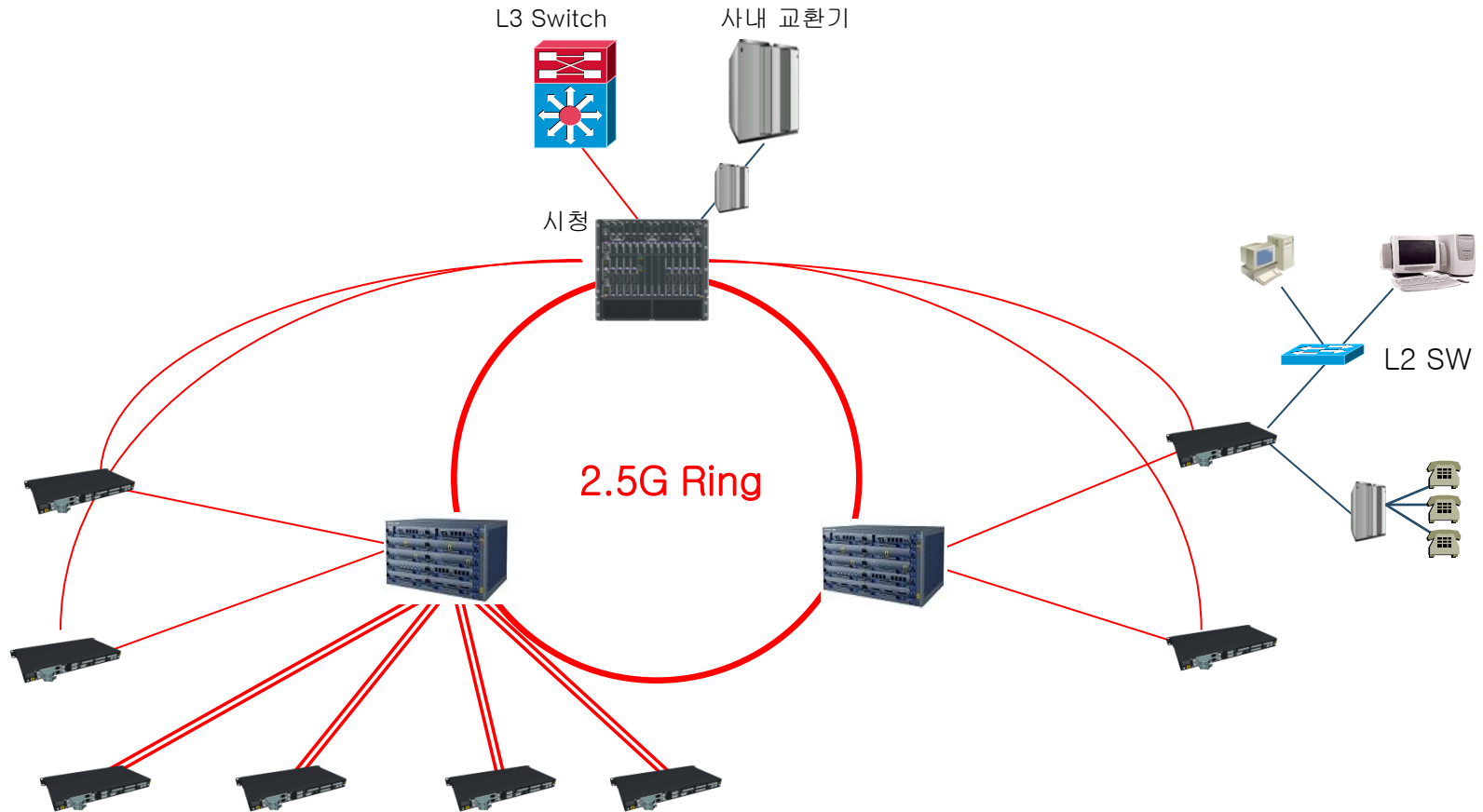
4. 기타

3. 타 지방자치단체 구축사례 – 군포시청 (MSPP장비로 자가행정망 구축)



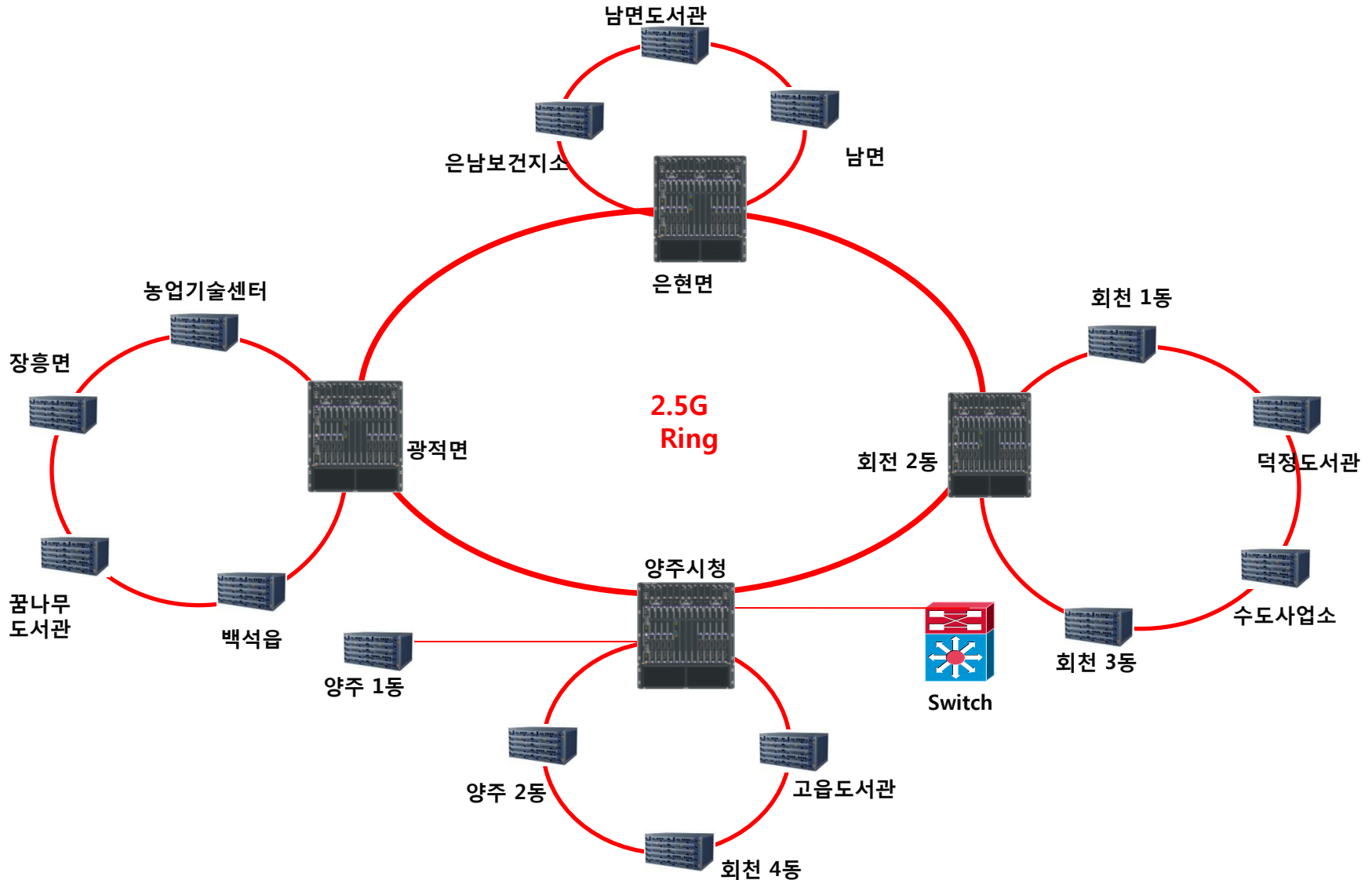
- 시청 내 MSPP(NR10000-I) 동사무소 내 MSPP(NR600)로 구축 운영 중.
- 데이터와 음성서비스 사용
- 안정적인 이중화 서비스 구현

3. 타 지방자치단체 구축사례 - 김포시청



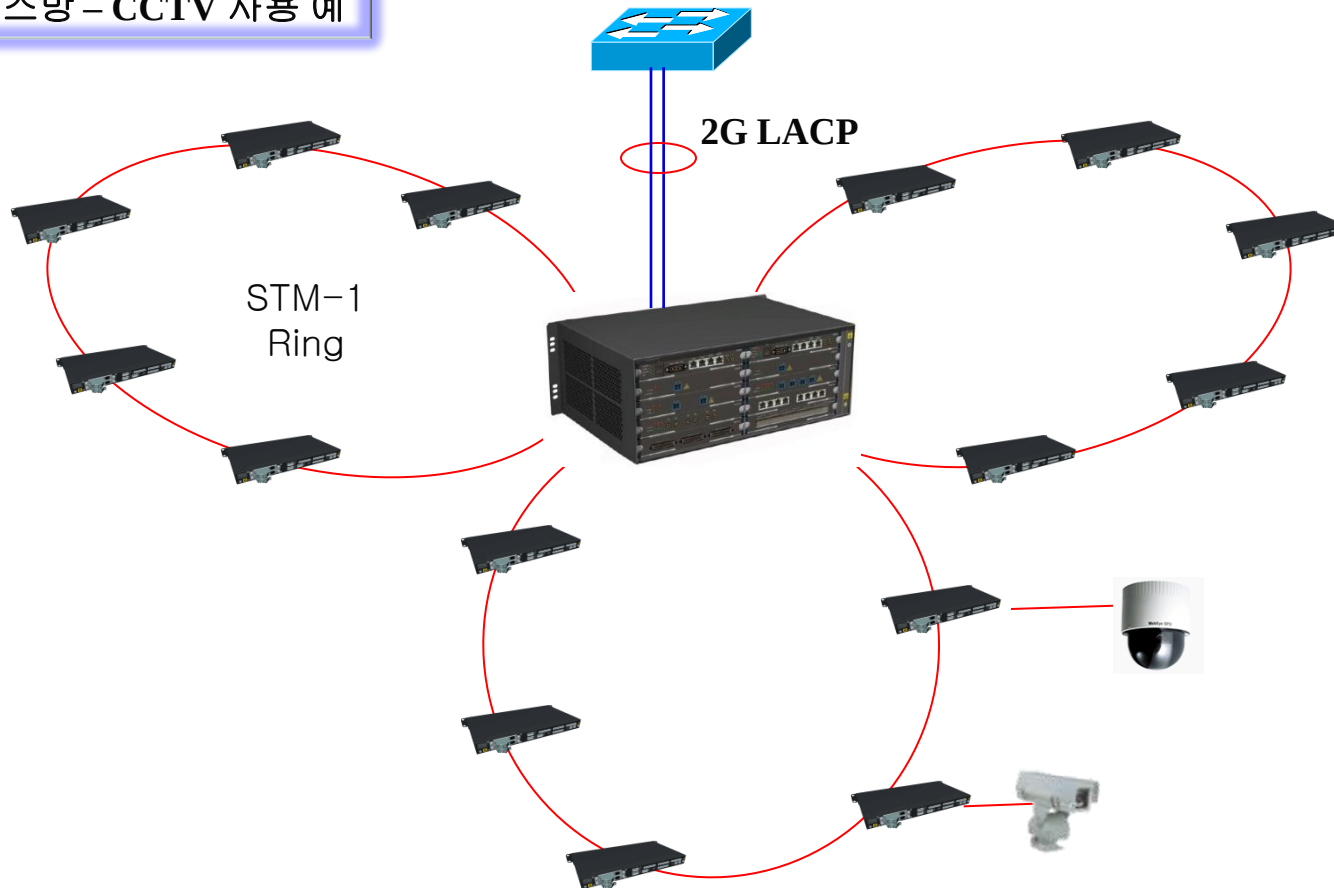
- 시청 내부에 MSPP(NR10K) 설치, 중간 노드 MSPP(NR2500) 설치, 각 주민센터간에 데이터와 음성서비스 구현 함
- STM-16 BLSR Ring으로 구현하여 안정적인 전송 망 구현
- 각 사업소에서는 1+1 과 SNCP Ring을 이용하여 이중화 구현 함

3. 타 지방자치단체 구축사례 - 양주시청 (MSPP장비로 자기행정망 구축)



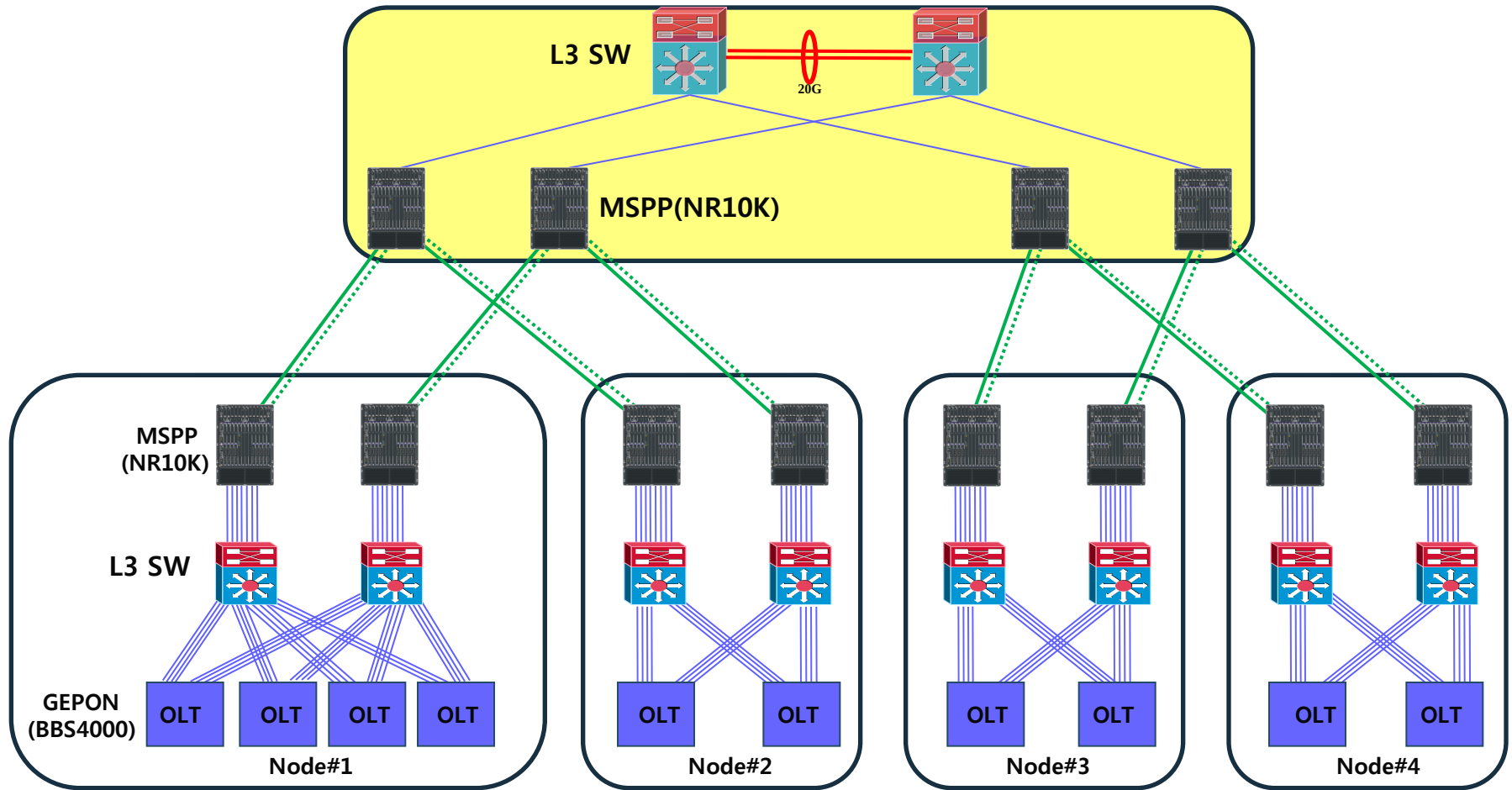
3. 타 지방자치단체 구축사례 – 하남시청 (MSPP장비로 자기행정망 구축)

행정 서비스망 – CCTV 사용 예



시청 내부에 NR2500을 설치 하고 백본과 이중화를 위해 LACP구성을 하여 이중화 시킴
각 노드는 NR600장비를 이용하여 CCTV와 연동하는 구조임.
SNCP Ring을 이용하여 안정화된 서비스 구현

3. 타 지방자치단체 구축사례 - 판교 U-city



- 판교 U-city망의 안정적인 서비스를 위해 전송구간은 유티스타콤 MSPP(NR10K) 제안 구축.
- 고화질(HD급) 영상 서비스를 위해 유티스타콤 GEPON장비를 Star방식을 설계 구축
→ 단말 ONU2004i 및 ONU2004i-2 장비가 1000대 이상 설계 구축.

1. MSPP 소개

2. UTStarcom 장비 소개

2-1 NR40K

2-2 NR10K

2-3 NR 2500

2-4 NR 1000

2-5 NR 600

3. 구축사례

4. 기타

UTStarcom Products 구축 Site





UTStarcom 광 전송(MSPP/PON/MPLS) Solution 기술 문의

- 정태을부장: sky@pit.or.kr / 02-869-7411 / 011-9075-3690