The FRM220A chassis solution of CTC Union Technology is a IP based Ethernet aggregated platform, which incorporates with a 20+8 ports L2 Gigabit Ethernet switch called "FRM220A-GSW/SNMP". The FRM220A is built-in the Gigabit Ethernet based IP backplane to interconnect the Ethernet access and E1 TDM based access module cards with FRM220-GSW/SNMP card. The FRM220A-GSW/SNMP card supports Gigabit based 4 RJ45 copper and 4 SFP slots as the uplink truck connection. It is not only the system aggregation/trucking module but also the system's management module, providing SNMP managed capability.
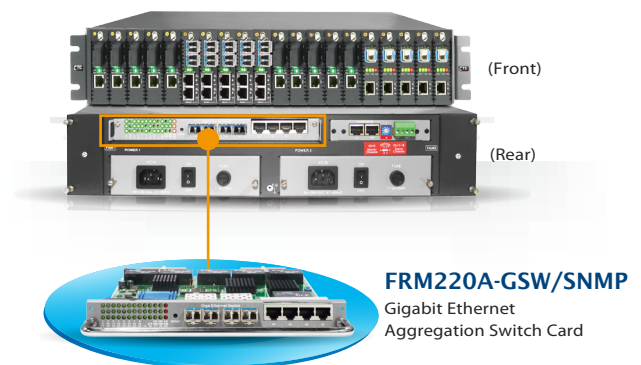
By CTC Union proprietary in-band management integrated with SmartView EMS management platform, the FRM220A chassis solution is indeed an IP Gigabit based backbone transportation platform. In the mean time, the NOC (Network Operation Center) of operator or service provider can easily manage and monitor the locally and remotely subscriber module card in real-time manner. It significantly save the OPEX for operator and service provider when deploys the fiber access network with FRM220A chassis solution.

The product lists designed to be adequately to the FRM220A-CH20 Ethernet aggregation application such as Ethernet access and Ethernet over PDH are included：

• FRM220A-1000EAS/X： 2 ports 10/100/1000Base-T + 2 ports 1000Base-X OAM/IP managed switch
• FRM220A-1002ES： Hardened 2 ports 10/100/1000Base-T + 2 ports 100/1000Base-X managed switch
• FRM220A-iMux series： E1 inverse multiplexer module cards
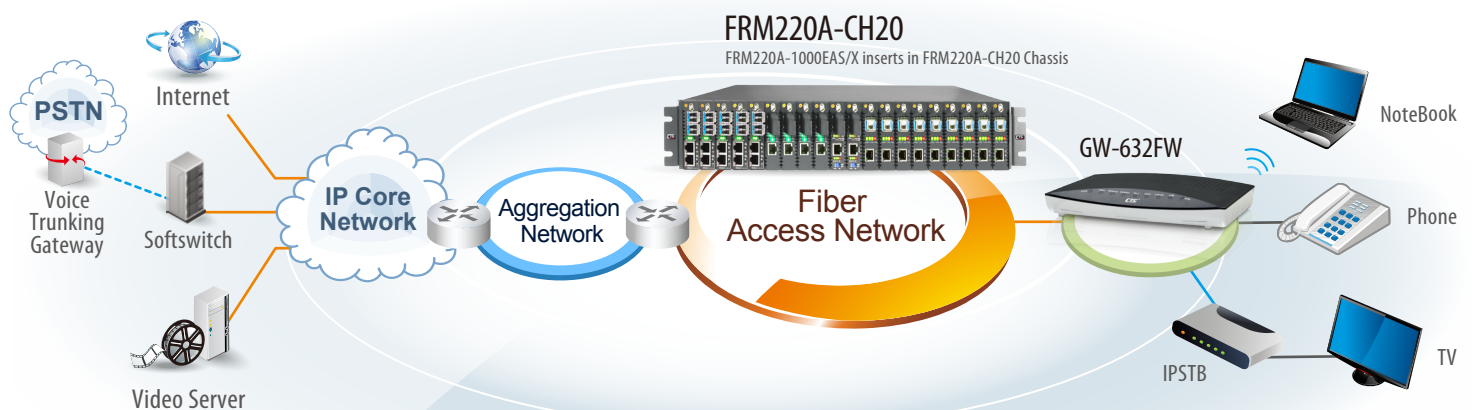• FRM220A-FSW103： 3 ports 10/100Base-TX + 100Base-FX managed switch

Key Feature of FRM220A-GSW/SNMP card

• Chassis aggregation via 4 ports 10/100/1000Base-T + 4 ports 1000Base-X SFP slots
• Gigabit based IP backplane of FRM-220A chassis
• Support IEEE 802.1D (STP) and IEEE 802.1w (RSTP) for ring and chain topology
• Uplink ports support IEEE 802.3ad for link aggregation trucking
• Support RADIUS client feature for security management
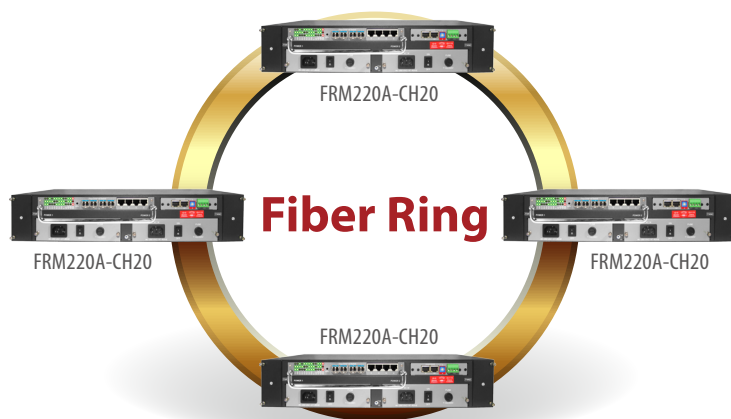• Support Web GUI, telnet and SNMP management

(Front)

(Rear)

FRM220A-GSW/SNMP
Gigabit Ethernet
Aggregation Switch Card

Application Diagram

FIBER　　RJ-11
Cat5 / 6　　E1

FRM220A-CH20
FRM220A-1000EAS/X inserts in FRM220A-CH20 Chassis

PSTN
Internet
Voice Trunking Gateway
Softswitch
Video Server
IP Core Network
Aggregation Network
Fiber Access Network
GW-632FW
NoteBook
Phone
IPSTB
TV

Enabling IP Transportation Protection Mechanism
- STP/RSTP Featured Ring Protection

FRM220A-CH20

Fiber Ring

FRM220A-CH20

FRM220A-CH20

FRM220A-CH20
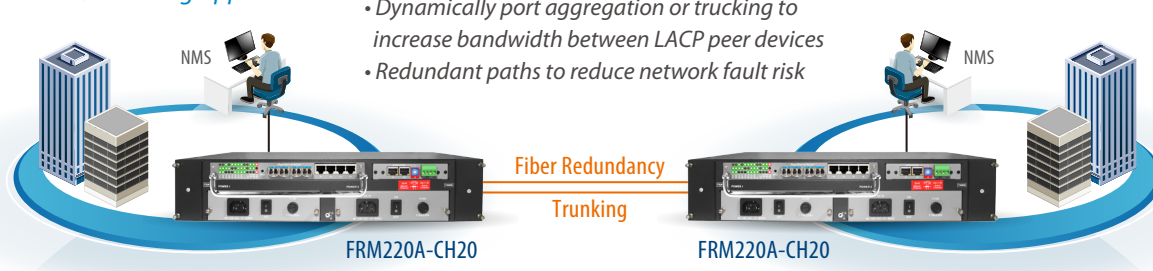
• Standard based but advanced fault protection systems
• Rapidly recovery path from failed connection
  (1-2 seconds min. recovery time)

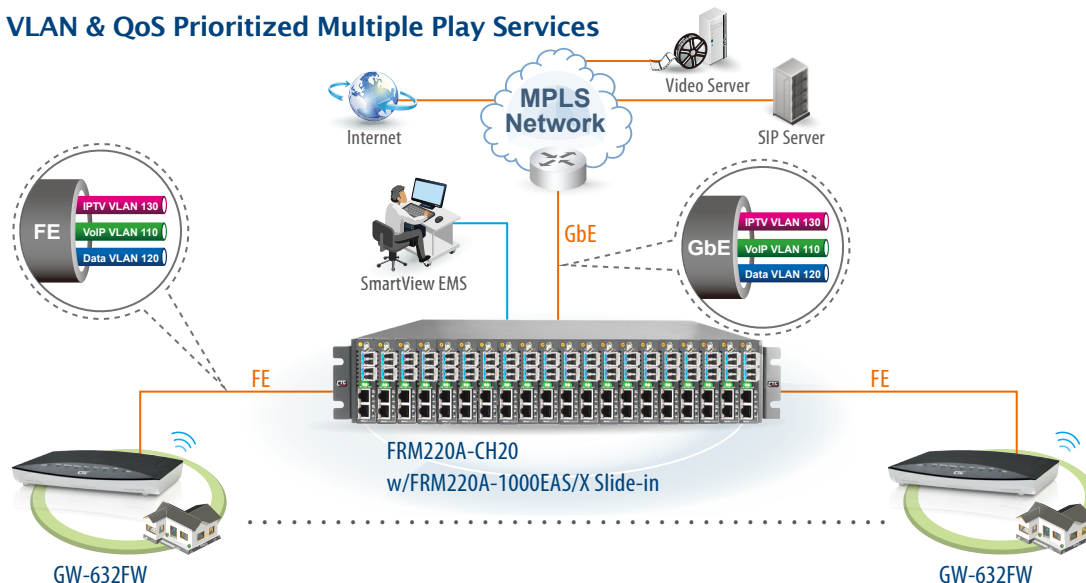## LACP Enabled Traffic Aggregation
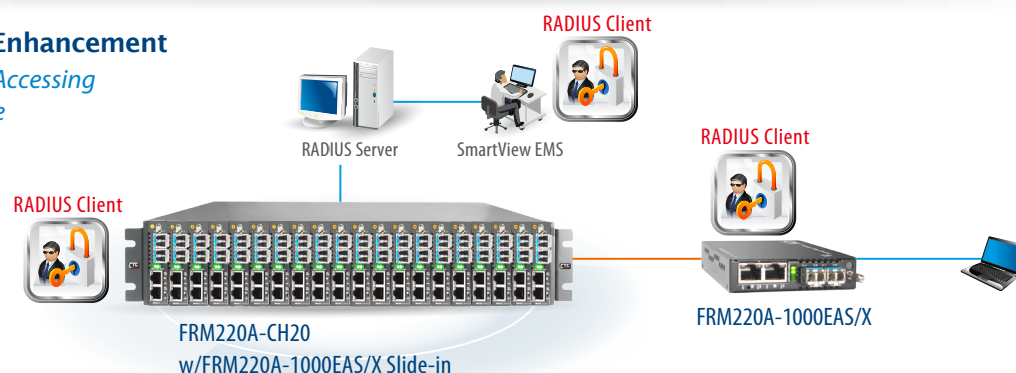### - Fiber Redundant / Trunking Application

NMS

NMS

• Dynamically port aggregation or trucking to
  increase bandwidth between LACP peer devices
• Redundant paths to reduce network fault risk

Fiber Redundancy

Trunking

FRM220A-CH20

FRM220A-CH20

Enabling VLAN & QoS Prioritized Multiple Play Services

Video Server

MPLS Network

Internet

SIP Server

IPTV VLAN 130
VoIP VLAN 110
Data VLAN 120

FE

GbE

IPTV VLAN 130
VoIP VLAN 110
Data VLAN 120

GbE

SmartView EMS

FE

FE

FRM220A-CH20
w/FRM220A-1000EAS/X Slide-in

GW-632FW

GW-632FW

Secured Access Control Enhancement
- Centralized Management of Accessing
the Network for user or device

RADIUS Client

RADIUS Server

SmartView EMS

RADIUS Client

RADIUS Client

FRM220A-CH20
w/FRM220A-1000EAS/X Slide-in

FRM220A-1000EAS/X

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