Smart City – IP Ethernet Based Mobile Backhaul Network (Taiwan)

Case Introduction

The auction of 4G LTE frequency bands was completed in Taiwan several years ago. In addition to the three original incumbent mobile operators, there were three new players which also won licenses. The three new mobile operators had provisioned the commercial mobile service in succession one year later. However, it was not only the construction of mobile service infrastructure in order to achieve the radio signal coverage in acceptable quality, but also the mobile backhaul network transportation was the key point for daily service operation for these 3 new mobile operators.

After winning the 4G service licenses, the new mobile operators found themselves with limited capital. To reach the maximum ROI, these mobile operators considered renting existed fiber network from regional service providers instead of building up their own fiber network infrastructure. This cooperation was a win-win model for both the mobile operators and regional service operators. The mobile operators could minimize their investment in infrastructure and operational costs and at the same time increase and improve their service coverage quickly. Concurrently, the regional service operator could bring in fresh income revenue by leasing their deployed fiber network infrastructure.

Customer Demands

• Double routes based ring topology built in the 12 districts of Taipei city with dual core fiber

• Switching time of ring protection < 50ms

• The Ethernet switch connected to 4G LTE BTS has to meet the working temperature between 0~65 Celsius as it is installed in the outdoor cabinet.

• The fiber access switches installed in the telecom room of each district have to be active concurrently in order to meet the requirement of dual equipment redundancy.

The above requirements for the planning network bring some challenges which the general Ethernet switch is almost hard to fulfill them. For example, the fastest recovery time about ring topology is

About CTC Union

CTC Union, founded in 1993, is committed to developing, manufacturing and selling network communication products with particular focus on fiber optical technologies, Ethernet technologies and the integration of broadband access technologies. With leading-edge technology and high quality service as the driving force, CTC Union continues steady growth to become a top global equipment supplier of innovative last-mile access in the telecommunications market.

the ITU-T G.8032 ERPS standard which is 50ms minimal. However, the ERPS cannot normally work under the connection of dual equipment redundancy which both Ethernet switches are active concurrently.

CTC applies the in-house developed proprietary µ-ring technology which can achieve the minimized 20ms recovery time in the ring topology network to the proposed Ethernet switch MSW-4424C and IGS+404SM. Also, the sub-ring key feature from µ-ring technology is leveraged in this case. Consequently, the perfectly integration of µ-ring technology on CTC MSW-4424C and IGS+404SM can completely meet the demanding network planning from the local telecom customer.

CTC Union Proposed Network Topology

■ 10Gbps IP Ethernet based backbone network

■ Backbone network extended to the 4G LTE BTS field sites

CTC Union Solutions

- Industrial Ethernet Switch - IGS+404SM
  4x 100/1000Base-T + 4x 100/1000Base-X SFP
  Managed Switch

- L2+ Carrier Ethernet Switch - MSW-4424C
  20x GbE SFP + 4x GbE Combo + 4x 10GE (SFP+)
  L2+ Managed Carrier Ethernet Switch

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