



ZTE

# ***TITAN PRODUCTS DATASHEET***

*Full-scenario Optical Access Platforms  
Oriented to Future*

## ZXA10 C680 Datasheet

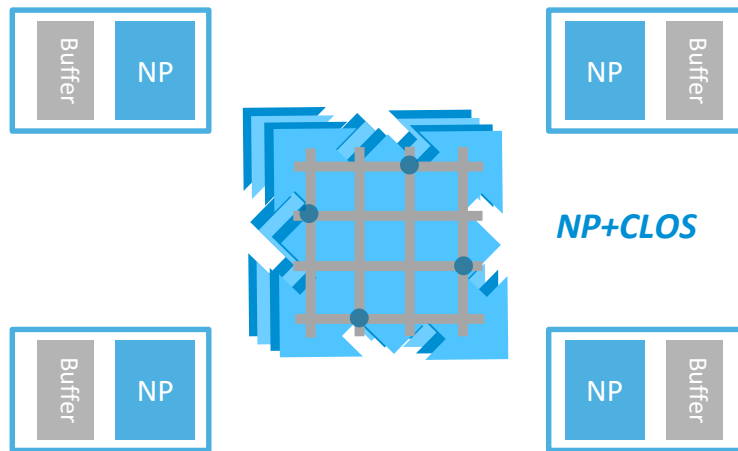
ZXA10 C680— The ultra large-capacity optical access equipment based on the TITAN platform. It meets the full-scenario access needs of ultra-high bandwidth, big video, network re-architecture and FMC, and provides the integration of transmission and access, as well as carrier-class QoS and security.



### Key Features

#### System architecture

- Network Processor(NP) +CLOS switch fabric architecture
- Four planes load sharing, Control and forwarding planes separate, decoupling of services and platforms
- Support ISSU and NSR.
- SDN ready, support Netconf/YANG, VXLAN.



#### Access capacity

- 576 GPON, 10G PON, Any-PON or Combo PON ports.
- Three generations of PON technologies and directions in one platform, and two generations PON(GPON and 10G PON) in one card.
- Support full services and scenarios access, such as big video, FMC, network re-architecture, etc.

## Hardware Features

### • Shelf configuration

- Total 51 slots
- 36 slots for service cards & uplink cards
- 2 slots for control cards
- 4 slots for switch cards
- 4 slots for power cards
- 1 slot for clock synchronization card

### • System capability

- Switching capacity of backplane bus: 28.8 Tbit/s
- Switching card: 3.6 Tbit/s
- System switching capacity: 14.4 Tbit/s

### • Uplink interface card

- 16 \* 10GE/GE uplink per card
- 8 \* 10GE/GE uplink per card

### • Subscriber card density

- GPON card: 16 ports per card
- XG-PON card: 16 ports per card
- XGS-PON card: 16 ports per card
- XG-PON & GPON Combo PON card: 16 Combo PON ports per card
- XGS-PON & GPON Combo PON card: 16 Combo PON ports per card
- Any-PON card: 16 Any-PON ports per card
- 10G-EPON card: 16 ports per card
- 10GE P2P card: 16 ports per card
- GE/FE P2P card: 24/48 ports per card

### • Clock synchronization interfaces

- 2 \* 120 Ω BITS clock input interface/1PPS+ToD time input interfaces.
- 1 \* 120 Ω BITS clock output interface/1PPS+ToD time output interface.
- 1 \* out-of-band NM interface.
- 1 \* public/maintenance serial port



## PON Features

### • GPON

- GPON is compliant to ITU G.984.x
- Support up to 1:128 optical split ratio
- Support OLS

### • XG-PON

- XG-PON is compliant to ITU G.987.x and G.988
- Support up to 1:256 optical split ratio
- Support OLS
- Type B/C optical link protection
- Support FEC
- Support AES-128

### • XGS-PON

- XGS-PON is compliant to ITU-T G.9807.1 and G.988
- Support up to 1:256 optical split ratio
- Support OLS
- Type B/C optical link protection
- Support FEC
- Support AES-128

### • Combo PON

- Each port integrates GPON optical module, XG-PON/XGS-PON optical module and WDM1r
- Support up to 1:128 optical split ratio
- Support OLS
- Type B/C optical link protection
- Support FEC
- Support AES-128



## L2/L3 Features

### • L2 Features

- Access control: MAC filtering, ACL
- L2-port: physical Ethernet ports, logical Vports and aggregation ports, support L2 services and TPID configuration
- VLAN: 1:1 VLAN, N:1 VLAN, flexible QinQ, VLAN bridge, TLS VLAN, M-VLAN, VLAN reuse
- 512K MAC address, MAC address management, permanent MAC, MAC address aging/learning/query/number limit
- Uplink protocol: STP/RSTP/MSTP, LACP

### • L3 Features

- Basic routing: unicast routing forwarding, static route, IP based load balance, ECMP
- Dynamic routing: RIPv1/v2, OSPFv2, BGP4, IS-IS v2, Graceful Restart, MD5, etc.
- DHCPv4: DHCP relay/proxy/snooping/snooping, Option 82, Option 60
- L3 interfaces: VLAN L3 routing, Loopback
- ARP: ARP protocol, ARP Proxy
- IPv6 basic features and ND
- Support BFD for IPv4/IPv6 routing protocol, including static/OSPF/ISIS/BGP.



## QoS Features

- Queue & scheduling mechanism: SP, WRR/DWRR, and SP+WRR
- DSCP labeling and relabeling
- Traffic statistics
- H-QoS
- Stream classification, rate limiting, shaping and priority setting
- Congestion Avoidance: tail drop, color-based RED, WRED
- Configuration of CIR/PIR/CBS/PBS/CM, TrTCM(Two Rate Three Color Marker)



## Network Slice

- Supports exclusively occupying the PON card and the P2P Ethernet card.
- Supports exclusively occupying the PON port and Ethernet physical port.
- Supports sharing PON port by multi-slices and assignment based on ONU.
- Supports the same user access/uplink /Ethernet convergence/Multicast/IP convergence/QoS/Security functions as the traditional OLT.





## MPLS

### • MPLS basic function

- Label distribution using LDP
- Label distribution mode configuration – DU/DoD
- Label retention mode – Liberal/Conservative
- Label control mode – Independent/ Ordered
- LDP Extension for Inter - Area LSP
- Explicit null configuration (PHP control)
- Graceful Restart
- MD5 encryption on LDP session

### • L2VPN - Ethernet VPLS/VPWS service

### • MPLS OAM

### • PWE3 basic function

- Dynamic PW
- PW type configuration negotiation – ETH
- VCCV configuration negotiation
- Control word enable negotiation
- PW ingress MPLS TC to AC VLAN CoS mapping
- PW egress AC VLAN CoS to MPLS TC mapping
- PSN VLAN on network side inherits CoS from MPLS label and AC VLAN

### • 1:1 PW redundant protection



## Security Features

### • Network security

- Broadcast/multicast flooding rate limitation
- Downstream ARP filtering
- Forwarding panel protocol packet rate limit
- DHCP anti-spoofing
- Anti-DoS attacking
- ARP/IP anti-spoofing
- IP Source Guard
- Basic ACL and IPv6 ACL

### • Service security

- DHCP service security
- MAC address anti-drifting
- Port isolation: Uplink port/User port
- Broadcast packets separation based on VLAN

### • System security

- L4 port disable
- CPU protocol packet rate limit and scheduling



## OAM Features

- Management protocol and interface: CLI, Telnet/SSHv2, SNMP v1/v2/v3, IGMP/MLD proxy/snooping model, alarm and performance model
- Performance statistic and diagnosis
- Remote firmware download and upgrade
- Environment detecting, control and alarm
- Ethernet OAM: 802.1ag
- System fault auto-recovery and performance detection



## Multicast

- IGMP snooping, proxy, router (v1/v2/v3)
- MLD v1/v2
- MVLAN: 4K Multicast VLAN
- Multicast snooping/proxy, router modes
- Enabling and disabling protocols globally or based on VLAN.
- ASM/SSM mode based on IGMPv3 and MLDv2
- Less than 20 ms channel zapping delay
- SCB multicast forwarding and L3 multicast forwarding.
- PIM-SM, PIM-SSM



## VxLAN

### • Basic VxLAN functions

- RFC7348
- Learning/aging MAC and VTEP IP
- Multiple AC type: port(PON port, vport), S-Vlan, S-Vlan+C-Vlan.
- Support IPv6
- VTEP port associated IGMP
- ARP suppression

### • Configuration functions

- VLAN configuration
- Status reporting
- Information Query
- Static MAC Configuration
- ARP suppression Configuration



## Environment

- Operating temperature: -40 °C ~ 65 °C for overall unit
- Starting up temperature: ≥ -25°C
- Operating humidity: 5% ~ 95%, non-condensing
- Altitude: ≤ 4000 m
- Air pressure: 70 kPa~106 kPa



## Power Supply

- Working voltage: -48 V (±20%), or -60 V (±20%)

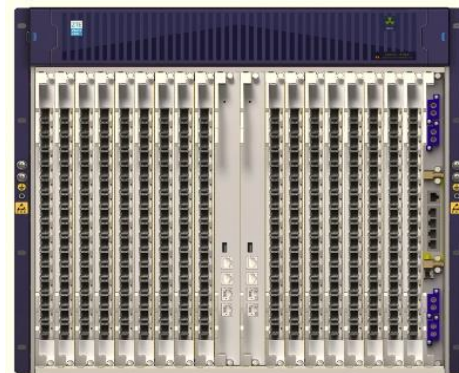


## Dimensions

- 1495 mm (H) \* 535mm (W) \* 288.5mm (D)
- Shelf weight (empty): 65 kg
- Full configuration: <140 kg

## ZXA10 C600 Datasheet

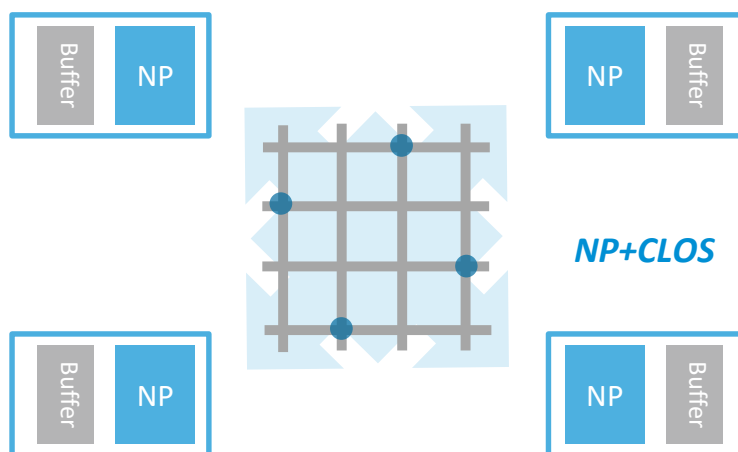
ZXA10 C600 is a large-capacity optical access equipment based on the TITAN platform. It meets the full-scenario access needs of ultra-high bandwidth, big video, FMC and network re-architecture, and provides the integration of transmission and access, as well as carrier-class QoS and security.



### Key Features

#### System architecture

- Network Processor(NP) +CLOS switch fabric architecture
- Support control and forwarding planes separate.
- Support ISSU and NSR.
- SDN ready, support Netconf/YANG, VXLAN.



#### Access Features

- 272/256 GPON, 10G PON, Any-PON or Combo PON ports.
- Three generations of PON technologies and directions in one platform, and two generations PON(GPON and 10G PON) in one card.
- Support full services and scenarios access, such as big video, FMC, network re-architecture, etc.

## Hardware Features

### • Shelf configuration

- ETSI 21" shelf: 23 slots, IEC19" shelf: 21 slots.
- 17 slots(21")/15 slots(19") for universal line cards
- 2 slots for switch & control cards
- 2 slots for power cards
- 1 slot for clock synchronization card
- 1 slot for FAN module

### • System capability

- Switching capacity of backplane bus: 14 Tbit/s
- Switching and control card: 3.6 Tbit/s
- System switching capacity: 7.2 Tbit/s

### • Uplink interface card

- 16 \* 10GE uplink per card
- 8 \* 10GE uplink per card

### • Subscriber card density

- GPON card: 16 ports per card
- XG-PON card: 16 ports per card
- XGS-PON card: 16 ports per card
- XG-PON & GPON Combo PON card: 16 Combo PON ports per card
- XGS-PON & GPON Combo PON card: 16 Combo PON ports per card
- Any-PON card: 16 Any-PON ports per card
- 10G-EPON card: 16 ports per card
- 10GE P2P card: 16 ports per card
- GE/FE P2P card: 24/48 ports per card

### • Clock synchronization interfaces

- 2 \* 120 Ω BITS clock input interface/1PPS+ToD time input interfaces.
- 1 \* 120 Ω BITS clock output interface/1PPS+ToD time output interface.
- 1 \* out-of-band NM interface.
- 1 \* public/maintenance serial port



## PON Features

### • GPON

- GPON is compliant to ITU G.984.x
- Support up to 1:128 optical split ratio
- Support OLS

### • XG-PON

- XG-PON is compliant to ITU G.987.x and G.988
- Support up to 1:256 optical split ratio
- Support OLS
- Type B/C optical link protection
- Support FEC
- Support AES-128

### • XGS-PON

- XGS-PON is compliant to ITU-T G.9807.1 and G.988
- Support up to 1:256 optical split ratio
- Support OLS
- Type B/C optical link protection
- Support FEC
- Support AES-128



### • Combo PON

- Each port integrates GPON optical module, XG-PON/XGS-PON optical module and WDM1r
- Support up to 1:128 optical split ratio
- Support OLS
- Type B/C optical link protection
- Support FEC
- Support AES-128



## L2/L3 Features

### • L2 Features

- Access control: MAC filtering, ACL
- L2-port: physical Ethernet ports, logical Vports and aggregation ports, support L2 services and TPID configuration
- VLAN: 1:1 VLAN, N:1 VLAN, flexible QinQ, VLAN bridge, TLS VLAN, M-VLAN, VLAN reuse
- 512K MAC address, MAC address management, permanent MAC, MAC address aging/learning/query/number limit
- Uplink protocol: STP/RSTP/MSTP, LACP

### • L3 Features

- Basic routing: unicast routing forwarding, static route, IP based load balance, ECMP
- Dynamic routing: RIPv1/v2, OSPFv2, BGP4, IS-IS v2, Graceful Restart, MD5, etc.
- DHCPv4: DHCP relay/proxy/snooping, Option 82, Option 60
- L3 interfaces: VLAN L3 routing, Loopback
- ARP: ARP protocol, ARP Proxy
- IPv6 basic features and ND
- Support BFD for IPv4/IPv6 routing protocol, including static/OSPF/ISIS/BGP.



## QoS Features

- Queue & scheduling mechanism: SP, WRR/DWRR, and SP+WRR
- DSCP labeling and relabeling
- Traffic statistics
- H-QoS
- Stream classification, rate limiting, shaping and priority setting
- Congestion Avoidance: tail drop, color-based RED, WRED
- Configuration of CIR/PIR/CBS/PBS/CM, TrTCM(Two Rate Three Color Marker)



## Network Slice

- Supports exclusively occupying the PON card and the P2P Ethernet card.
- Supports exclusively occupying the PON port and Ethernet physical port.
- Supports sharing PON port by multi-slices and assignment based on ONU.
- Supports the same user access/uplink /Ethernet convergence/Multicast/IP convergence/QoS/Security functions as the traditional OLT.



## MPLS

### • MPLS basic function

- Label distribution using LDP
- Label distribution mode configuration – DU/DoD
- Label retention mode – Liberal/Conservative
- Label control mode – Independent/ Ordered
- LDP Extension for Inter - Area LSP
- Explicit null configuration (PHP control)
- Graceful Restart
- MD5 encryption on LDP session

### • L2VPN - Ethernet VPLS/VPWS service

### • MPLS OAM

### • PWE3 basic function

- Dynamic PW
- PW type configuration negotiation – ETH
- VCCV configuration negotiation
- Control word enable negotiation
- PW ingress MPLS TC to AC VLAN CoS mapping
- PW egress AC VLAN CoS to MPLS TC mapping
- PSN VLAN on network side inherits CoS from MPLS label and AC VLAN

### • 1:1 PW redundant protection



## Security Features

### • Network security

- Broadcast/multicast flooding rate limitation
- Downstream ARP filtering
- Forwarding panel protocol packet rate limit
- DHCP anti-spoofing
- Anti-DoS attacking
- ARP/IP anti-spoofing
- IP Source Guard
- Basic ACL and IPv6 ACL

### • Service security

- DHCP service security
- MAC address anti-drifting
- Port isolation: Uplink port/User port
- Broadcast packets separation based on VLAN

### • System security

- L4 port disable
- CPU protocol packet rate limit and scheduling



## OAM Features

- Management protocol and interface: CLI, Telnet/SSHv2, SNMP v1/v2/v3, IGMP/MLD proxy/snooping model, alarm and performance model
- Performance statistic and diagnosis
- Remote firmware download and upgrade
- Environment detecting, control and alarm
- Ethernet OAM: 802.1ag
- System fault auto-recovery and performance detection



## Multicast

- IGMP snooping, proxy, router (v1/v2/v3)
- MLD v1/v2
- MVLAN: 4K Multicast VLAN
- Multicast snooping/proxy, router modes
- Enabling and disabling protocols globally or based on VLAN.
- ASM/SSM mode based on IGMPv3 and MLDv2
- Less than 20 ms channel zapping delay
- SCB multicast forwarding and L3 multicast forwarding.
- PIM-SM, PIM-SSM



## VxLAN

### • Basic VxLAN functions

- RFC7348
- Learning/aging MAC and VTEP IP
- Multiple AC type: port(PON port, vport), S-Vlan, S-Vlan+C-Vlan.
- Support IPv6
- VTEP port associated IGMP
- ARP suppression

### • Configuration functions

- VLAN configuration
- Status reporting
- Information Query
- Static MAC Configuration
- ARP suppression Configuration



## Environment

- Operating temperature: -40 °C ~ 65 °C for overall unit
- Starting up temperature: ≥ -25°C
- Operating humidity: 5% ~ 95%, non-condensing
- Altitude: ≤ 4000 m
- Air pressure: 70 kPa~106 kPa



## Power Supply

- Working voltage: -48 V (±20%), or -60 V (±20%)



## Dimensions

- 21" shelf: 486.1 mm (H) \* 535 mm(21") (W) \* 288.5 mm (D)
- 19" shelf: 486.1 mm (H) \* 482.6 mm(19") (W) \* 288.5 mm (D)
- 21" Empty shelf: 21 kg, full configuration: < 58 kg
- 19" Empty shelf: 18 kg, full configuration: < 52 kg

## ZXA10 C650 Datasheet

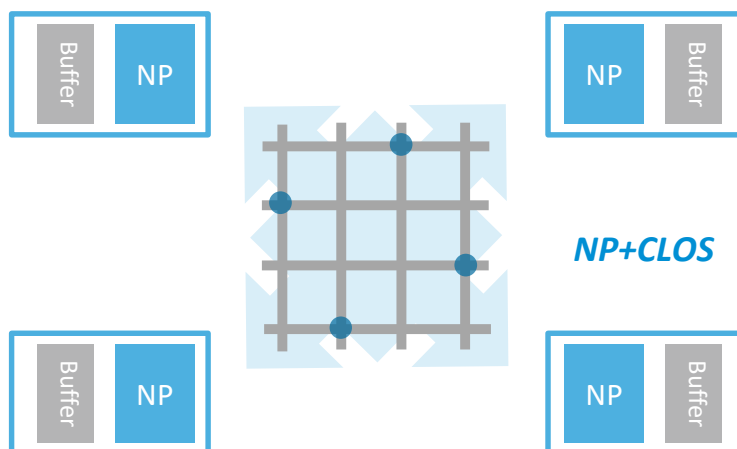
The ZXA10 C600 is a medium-capacity optical access equipment based on the TITAN platform. It meets the full-scenario access needs of ultra-high bandwidth, big video, FMC and network re-architecture, and provides the integration of transmission and access, as well as carrier-class QoS and security.



### Key Features

#### System architecture

- Network Processor(NP) +CLOS architecture
- Support control and forwarding planes separate.
- Support ISSU and NSR.
- SDN ready, support Netconf/YANG, VXLAN.



#### Access Features

- 112 GPON, 10G PON, Any-PON or Combo PON ports.
- Three generations of PON technologies and directions in one platform, and two generations PON(GPON and 10G GPON) in one card.

## Hardware Features

### • Shelf configuration

- Total 13 slots
- 7 slots for universal line cards
- 2 slots for switch & control cards
- 2 slots for power cards
- 1 slot for clock synchronization card

### • System capability

- Switching capacity of backplane bus: 6 Tbit/s
- Switching and control card: 3.6 Tbit/s
- System switching capacity: 7.2 Tbit/s

### • Uplink interface card

- 16 \* 10GE uplink per card
- 8 \* 10GE uplink per card

### • Subscriber card density

- GPON card: 16 ports per card
- XG-PON card: 16 ports per card
- XGS-PON card: 16 ports per card
- XG-PON & GPON Combo PON card: 16 Combo PON ports per card
- XGS-PON & GPON Combo PON card: 16 Combo PON ports per card
- Any-PON card: 16 Any-PON ports per card
- 10G-EPON card: 16 ports per card
- 10GE P2P card: 16 ports per card
- GE/FE P2P card: 24/48 ports per card

### • Clock synchronization interfaces

- 2 \* 120 Ω BITS clock input interface/1PPS+ToD time input interfaces.
- 1 \* 120 Ω BITS clock output interface/1PPS+ToD time output interface.
- 1 \* out-of-band NM interface.
- 1 \* public/maintenance serial port



## PON Features

### • GPON

- GPON is compliant to ITU G.984.x
- Support up to 1:128 optical split ratio
- Support OLS

### • XG-PON

- XG-PON is compliant to ITU G.987.x and G.988
- Support up to 1:256 optical split ratio
- Support OLS
- Type B/C optical link protection
- Support FEC
- Support AES-128

### • XGS-PON

- XGS-PON is compliant to ITU-T G.9807.1 and G.988
- Support up to 1:256 optical split ratio
- Support OLS
- Type B/C optical link protection
- Support FEC
- Support AES-128



### • Combo PON

- Each port integrates GPON optical module, XG-PON/XGS-PON optical module and WDM1r
- Support up to 1:128 optical split ratio
- Support OLS
- Type B/C optical link protection
- Support FEC
- Support AES-128



## L2/L3 Features

### • L2 Features

- Access control: MAC filtering, ACL
- L2-port: physical Ethernet ports, logical Vports and aggregation ports, support L2 services and TPID configuration
- VLAN: 1:1 VLAN, N:1 VLAN, flexible QinQ, VLAN bridge, TLS VLAN, M-VLAN, VLAN reuse
- 512K MAC address, MAC address management, permanent MAC, MAC address aging/learning/query/number limit
- Uplink protocol: STP/RSTP/MSTP, LACP

### • L3 Features

- Basic routing: unicast routing forwarding, static route, IP based load balance, ECMP
- Dynamic routing: RIPv1/v2, OSPFv2, BGP4, IS-IS v2, Graceful Restart, MD5, etc.
- DHCPv4: DHCP relay/proxy, Option 82, Option 60
- L3 interfaces: VLAN L3 routing, Loopback
- ARP: ARP protocol, ARP Proxy
- IPv6 basic features and ND
- Support BFD for IPv4/IPv6 routing protocol, including static/OSPF/ISIS/BGP.



## QoS Features

- Queue & scheduling mechanism: SP, WRR/DWRR, and SP+WRR
- DSCP labeling and relabeling
- Traffic statistics
- H-QoS
- Stream classification, rate limiting, shaping and priority setting
- Congestion Avoidance: tail drop, color-based RED, WRED
- Configuration of CIR/PIR/CBS/PBS/CM, TrTCM(Two Rate Three Color Marker)



## Network Slice

- Supports exclusively occupying the PON card and the P2P Ethernet card.
- Supports exclusively occupying the PON port and Ethernet physical port.
- Supports sharing PON port by multi-slices and assignment based on ONU.
- Supports the same user access/uplink /Ethernet convergence/Multicast/IP convergence/QoS/Security functions as the traditional OLT.



## MPLS

- **MPLS basic function**

- Label distribution using LDP
- Label distribution mode configuration – DU/DoD
- Label retention mode – Liberal/Conservative
- Label control mode – Independent/ Ordered
- LDP Extension for Inter - Area LSP
- Explicit null configuration (PHP control)
- Graceful Restart
- MD5 encryption on LDP session

- **L2VPN - Ethernet VPLS/VPWS service**

- **MPLS OAM**

- **PWE3 basic function**

- Dynamic PW
- PW type configuration negotiation – ETH
- VCCV configuration negotiation
- Control word enable negotiation
- PW ingress MPLS TC to AC VLAN CoS mapping
- PW egress AC VLAN CoS to MPLS TC mapping
- PSN VLAN on network side inherits CoS from MPLS label and AC VLAN

- **1:1 PW redundant protection**



## Security Features

- **Network security**

- Broadcast/multicast flooding rate limitation
- Downstream ARP filtering
- Forwarding panel protocol packet rate limit
- DHCP anti-spoofing
- Anti-DoS attacking
- ARP/IP anti-spoofing
- IP Source Guard
- Basic ACL and IPv6 ACL

- **Service security**

- DHCP service security
- MAC address anti-drifting
- Port isolation: Uplink port/User port
- Broadcast packets separation based on VLAN

- **System security**

- L4 port disable
- CPU protocol packet rate limit and scheduling



## OAM Features

- Management protocol and interface: CLI, Telnet/SSHv2, SNMP v1/v2/v3, IGMP/MLD proxy/snooping model, alarm and performance model
- Performance statistic and diagnosis
- Remote firmware download and upgrade
- Environment detecting, control and alarm
- Ethernet OAM: 802.1ag
- System fault auto-recovery and performance detection



## Multicast

- IGMP snooping, proxy, router (v1/v2/v3)
- MLD v1/v2
- MVLAN: 4K Multicast VLAN
- Multicast snooping/proxy, router modes
- Enabling and disabling protocols globally or based on VLAN.
- ASM/SSM mode based on IGMPv3 and MLDv2
- Less than 20 ms channel zapping delay
- SCB multicast forwarding and L3 multicast forwarding.
- PIM-SM, PIM-SSM



## VxLAN

### • Basic VxLAN functions

- RFC7348
- Learning/aging MAC and VTEP IP
- Multiple AC type: port(PON port, vport), S-Vlan, S-Vlan+C-Vlan.
- Support IPv6
- VTEP port associated IGMP
- ARP suppression

### • Configuration functions

- VLAN configuration
- Status reporting
- Information Query
- Static MAC Configuration
- ARP suppression Configuration



## Environment

- Operating temperature: -40 °C ~ 65 °C for overall unit
- Starting up temperature: ≥ -25°C
- Operating humidity: 5% ~ 95%, non-condensing
- Altitude: ≤ 4000 m
- Air pressure: 70 kPa~106 kPa



## Power Supply

- Working voltage: -48 V (±20%), or -60 V (±20%)



## Dimensions

- 263.9 mm (H) \* 482.6 mm (W) \* 285.3 mm (D)
- Shelf weight (empty): 12 kg
- Full configuration: <30 kg

## ZXA10 C620 Datasheet

ZXA10 C620 is a 2U high capacity optical access equipment based on TITAN platform. It meets the full-scenario access needs of ultra-high bandwidth, big video, FMC and network re-architecture, and provides the integration of transmission and access, as well as carrier-class QoS and security.

DC Shelf:



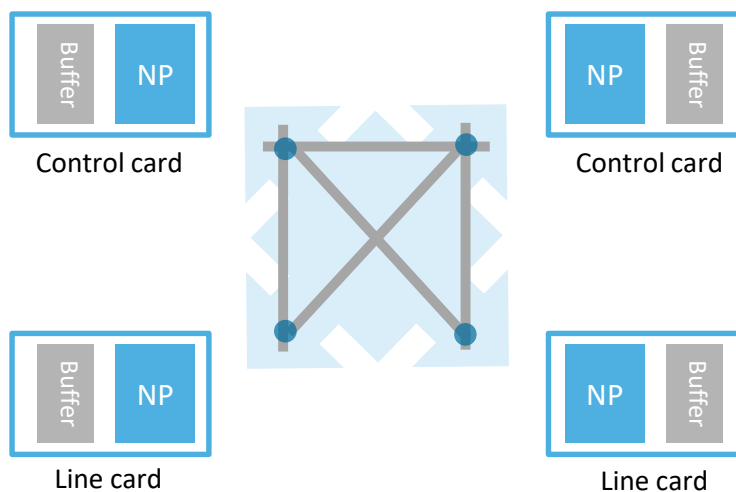
AC Shelf:



### Key Features

#### ● System architecture

- Programmable Network Processor(NP)
- Support control and forwarding planes separate.



#### ● Access Features

- 32 GPON, 10G PON, Any-PON or Combo PON ports.
- Three generations of PON technologies and directions, and two generations PON(GPON and XG(S)-PON) in one card.
- Support full services and scenarios access, such as big video, 5G bearing, Access office re-architecture, etc.

## Hardware Features

### • Shelf configuration

- Total 6 slots (AC) / 7 slots (DC)
- 2 slots for service cards
- 2 slots for switch & control cards
- 1 slot for AC power card / 2 slots for DC power cards
- 1 slot for fan module

### • System capability

- Switching capacity of backplane bus: 1.8 Tbit/s
- Switching and control card: 240 Gbit/s
- System switching capacity: 480 Gbit/s

### • Uplink interface card

- 4 \* 10GE/GE uplink per card (on switching and control card)

### • Subscriber card density

- GPON card: 16 ports per card
- XGS-PON card: 16 ports per card
- XG-PON card: 16 ports per card
- XG-PON & GPON Combo PON card: 16 Combo PON ports per card
- XGS-PON & GPON Combo PON card: 16 Combo PON ports per card
- Any-PON card: 16 Any-PON ports per card
- 10G-EPON card: 16 ports per card
- P2P card: 16 ports 10GE SFP+/GE SFP, or 24 CSFP P2P GE/FE (supports 48-port)

### • Management & Maintenance

- 1 out-of-band management interface
- 1 maintenance serial interface
- 1 Environmental detection serial interface
- 1 clock interface provided by SPUFS
- 1 line card debugging serial interface



## PON Features

### • GPON

- Compliant to ITU G.984.x, G.988
- Support up to 1:128 optical split ratio
- Support OLS (Optical Line Supervision)
- Support optical link protection
- Support downstream/upstream FEC
- Supports AES-128 encryption
- Maximum logical distance: 60 km
- Maximum differential distance: 40 km  
maximum physical distance : 60 km

### • XG-PON

- Compliant to ITU G.987.x and G.988
- Support up to 1:256 optical split ratio
- Support OLS (Optical Line Supervision)
- Support optical link protection
- Support downstream/upstream FEC
- Supports AES-128 encryption
- Maximum logical distance: 60 km
- Maximum differential distance: 40 km  
maximum physical distance : 60 km



### • XGS-PON

- Compliant to ITU G.9807 and G.988
- Support up to 1:256 optical split ratio
- Support OLS (Optical Line Supervision)
- Support optical link protection
- Support downstream/upstream FEC
- Supports AES-128 encryption
- Maximum logical distance: 60 km
- Maximum differential distance: 40 km maximum physical distance : 60 km

### • Combo PON

- Each port integrates GPON optical module, XG-PON/XGS-PON optical module and WDM1r
- Support up to 1:128 optical split ratio
- Support OLS (Optical Line Supervision)
- Support optical link protection
- Support downstream/upstream FEC
- Supports AES-128 encryption
- Maximum logical distance: 60 km
- Maximum differential distance: 40 km maximum physical distance : 60 km



## L2/L3 Features

### • L2 Features

- Access control: MAC filtering, ACL
- L2-port: Physical Ethernet ports, logical Vports and aggregation ports, support L2 services and TPID configuration
- 128K mac address, 1:1 VLAN, N:1 VLAN and TLS VLAN, VLAN translation, VLAN stacking, flexible QinQ
- Permanent MAC, MAC address aging/learning/query/number limit
- Uplink protocol: STP/RSTP/MSTP, LACP

### • L3 Features

- Basic routing: unicast routing forwarding, static route, IP based load balance, ECMP
- Dynamic routing: RIPv1/v2, OSPFv2/v3, BGP4, IS-IS v2, graceful restart, MD5, etc.
- DHCPv4: DHCP relay/proxy, Option 82, Option 60
- ARP: ARP protocol, ARP Proxy
- IPV4 host route table: 64K
- IPV6 host route table: 64K



## QoS Features

- Supports SP, WRR, and SP+DWRR queue scheduling on Ethernet ports, PON ports, and Vports
- DSCP labeling and relabeling
- Traffic statistics
- H-QoS
- Stream classification, rate limiting, shaping and priority setting
- Congestion Avoidance: tail drop, color-based RED, WRED
- Configuration of CIR/PIR/CBS/PBS/CM, TrTCM(Two Rate Three Color Marker)



## Security Features

### • System security

- L4 port disable
- CPU protocol packet rate limit and scheduling

### • Service security

- MAC address anti-drifting
- DHCP service security
- Port isolation: Uplink port/User port
- Broadcast packets separation based on VLAN

### • Network security

- Broadcast/multicast flooding rate limitation
- Forwarding panel protocol packet rate limit
- Downstream ARP filtering
- DHCP anti-spoofing
- Anti-DoS attack
- ARP/IP anti-spoofing
- IP Source Guard
- ACL



## OAM Features

- Management protocol and interface: CLI, Telnet/SSHv2, SNMP v1/v2/v3, IGMP/MLD proxy/snooping model, Alarm and performance model
- Performance statistic and diagnosis

- Remote firmware download and upgrade
- Environment detecting, control and alarm
- Ethernet OAM: 802.1ag/Y.1731
- System fault auto-recovery and performance detection



## Multicast

- IGMP v1/v2/v3, IGMP snooping, IGMP proxy, SPR, and Router
- MLD v1/v2
- Multicast VLAN: 4K
- IGMP multicast group quantity: 4K

- ASM/SSM mode based on IGMPv3 and MLDv2
- Supports SCB multicast forwarding and L3 multicast forwarding
- Global or VLAN protocol enable or disable



## Power Supply

- DC Working voltage: -48 V ( $\pm 20\%$ ), or -60 V ( $\pm 20\%$ )
- AC Working voltage: 100V ~ 240V



## Environment

- Operating temperature: -40 °C ~ 65 °C for overall unit
- Starting up temperature  $\geq$  -25°C
- Operating humidity: 5% ~ 95%, non-condensing
- Altitude:  $\leq$  4000 m
- Air pressure: 70 kPa~106 kPa



## Dimensions

- Shelf: 88.1 mm x 482.6 mm x 283.5 mm (Height × Width × Depth)



## Weight

- Empty chassis: 3.93 kg
- Full configuration: < 13 kg