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ZTE TECHNOLOGIES

VIP Voice

The Operator's Next Act

Industry Insights

The 50G-PON Slowdown: Aligning Next-Generation Broadband with AI-Era Demands

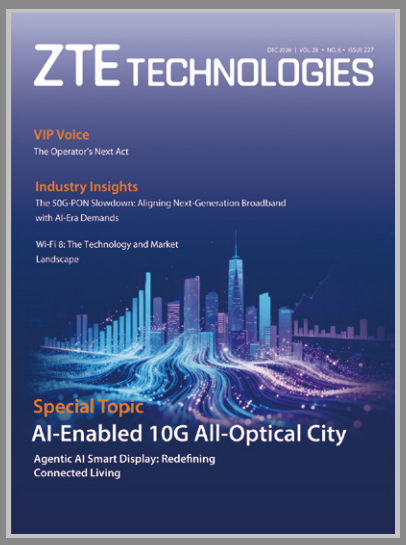
Wi-Fi 8: The Technology and Market Landscape



Special Topic

AI-Enabled 10G All-Optical City

Agentic AI Smart Display: Redefining Connected Living



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The Operator's Next Act



Carl Raymond R. Cruz
President and CEO of Globe Telecom

At ZTE's 15th Global Summit and Users Congress 2026 held in Kuala Lumpur, Carl Raymond R. Cruz, President and CEO of Globe Telecom in the Philippines, discusses the shifting role of operators in the digital economy and shares how Globe Telecom is unlocking more value from its existing network, customers, data, and partnerships.

We are living through a pretty remarkable shift. The world is becoming more connected, more digital, and increasingly intelligent. Every year, there are more devices, more data, more services moving through our networks. And now AI is changing not just what people consume, but how businesses operate and how customers interact with companies.

At the same time, the customer experience is moving away from the network itself. People care less about the technology underneath. They care about what it enables—speed, simplicity, relevance, trust.

And that creates an interesting moment for the telco industry, and begs the question:

What must a telecom operator become to remain relevant and competitive in the next digital era?

The Digital Economy Is Expanding on Rails Built by Telcos

Today, and as we look towards the future, the demand for connectivity keeps on growing.

Mobile traffic is expected to be 2.5 times higher by 2031. The value created around connectivity is also expanding. McKinsey estimates roughly US$100 trillion of "digitally influenced economic activity" by 2030. At the same time, AI is moving very quickly into enterprise software. Gartner expects a significant share of enterprise applications to incorporate agentic AI by 2028. And all of these run on connectivity foundations built and continuously upgraded by telcos.

This is where I think telecom has a problem. We built the rails. We continue to carry the traffic. And we continue to fund the infrastructure behind it. But much of the value is being captured somewhere else.

You can see it in three numbers. First, traffic keeps rising while the economics of basic connectivity continue to compress. Second, traditional telcos tend to trade at around 5 to 7 times EV multiples, while technology companies can trade at 15 times or more. And third, over the last two decades, telco shareholder returns grew about 29%, compared with 235% across global sectors. That is a very large gap. So this is not simply an industry-growth issue. It is a value-capture issue.

We have been very good at enabling the digital economy. We need to get better at capturing the value it creates. That's the shift.

Leading Operators are Converging on Five Capabilities

We looked at a number of leading operators around the world. They don't all look the same. But five capabilities keep showing up: intelligent infrastructure; AI-enabled enterprise; outcome and ecosystem platforms; trust; and active capital and asset management.

Different operators are stronger in different areas. But the direction is remarkably similar. The network becomes more intelligent. The organization becomes more AI-enabled. The customer relationship becomes broader as leading telcos expand the scope of where they play. Trust becomes part of the proposition. And capital becomes much more deliberate.

Put those together, and you get a different kind of operator. A trusted digital orchestrator.

Not less telecom. More value from telecom.

Globe Telecom Is Following this Same Blueprint for Its Next Act

At Globe, we see the same opportunity. And we



are taking a fairly simple approach: start with the assets we already have—our network, our customers, our data, our partnerships, and our ability to invest.

Then ask a much harder question: how do we create and get more value from each of them? For us, that means three things: intelligent infrastructure, trust-backed platforms, and fit-for-purpose scale. Let me show you what that looks like in practice.

With Intelligent Infrastructure…

Let's start with the network. Better infrastructure is not just about having more sites; it is about creating a better customer experience—and then turning that experience into more usage and more value.

Globe has been recognized by Ookla for network consistency and 5G coverage, and we're seeing the commercial effect: 5G traffic is up 23%, with average traffic per user up 45%, and our 5G customers generate around a 10% ARPU premium versus non-5G users.

But intelligent infrastructure goes beyond monetization. It means using AI to predict problems before they happen, so we can replace components before they fail and prevent downtime; using AI to optimize how we deliver our services; and dynamically combining terrestrial and satellite networks when customers need it.

So the relationship is becoming pretty clear; quality drives usage, intelligence helps us sustain quality, and usage drives value. That is what we mean when we talk about intelligent infrastructure.

AI Access Leads to Adoption, and Adoption Drives Outcomes

At Globe, we don't want AI to be something that a small specialist team uses. We want it to become part of how the organization works. Today, around 90% of Globe has access to AI, with more than 260 use cases and more than 250 active builders. And we're seeing practical improvements already, with selected workflows moving faster, including API development and debugging.

The important number isn't 90%. The important thing is what happens after 90%. People start using the tools. They learn. They build. And the organization gets faster.

That is when AI starts to matter.

Reach Creates Engagement. Engagement Drives Outcomes

Then there is the customer side. Globe has something that many companies would love to have: reach. And we are using that reach to address very real needs.

For households, 1.1 million GFiber Prepaid customers are getting access to affordable, reliable home connectivity—helping drive a four-point increase in household fiber penetration over the last two years. For connectivity, 2.2 million customers have had their mobile lifeline extended through Starlink Direct-to-Cell, a first in the Philippines. And in underserved communities, we have provided 400,000 free Bayanihan SIMs across 180 GIDA sites, delivering a 73% ARPU lift versus baseline.

Then there is financial access: 11.5 million GCash borrowers. 21.8 million insured users. 17.9 million savers. Different needs. Different moments. But the idea is the same. Reach creates engagement. Engagement creates outcomes.

This is what an ecosystem can do when connectivity is used not just to connect people, but to help them live, work and participate more fully.

Building a Secure Foundation for the Digital Economy

There is one thing underneath all of this. Trust.

We have blocked 967 million scam and spam messages and deactivated more than 244,000 fraud-linked SIMs. We are also working with government to strengthen the country's defenses against fraud and illicit activity.

Why make such a big deal of this? Because the more digital the economy becomes, the more important trust becomes. Customers need to know that their identity is protected, their transactions are protected, and their data is protected.

Trust is not separate from the digital experience. It is part of it. And for an operator, that can become a real source of differentiation.

Scaling Assets Through Smart Partnerships

The last piece is capital. We cannot build the next operator by owning everything. So we are becoming much more deliberate about what Globe keeps in its balance sheet. We have transferred 88% of our tower portfolio into a specialist model, are scaling our data-center business with STT GDC, with capacity targeted at more than 30 megawatts, and through NCS, our enterprise technology capability has grown from around 150 people to more than 1,200.

The principle is straightforward: Keep the things that differentiate us. Partner where someone else can scale faster, better or more efficiently. That gives us more capability without turning every opportunity into a balance-sheet decision.

Technology Is not the Destination. Uplifting Lives Is

And this is where I want to finish. Because none of this is really about technology. Technology is the tool. The destination is what it does for people.

For Globe, that means three things: democratize connectivity—making it possible for more people to participate through mobile, fiber, and satellite; democratize financial access—giving people more ways to pay, save, borrow and protect themselves; and increasingly democratize intelligence—giving more people (our employees included) and more businesses access to the benefits of AI.

That is how I think about the operator's next act. Not becoming a technology company. Not trying to become everything. But becoming a trusted digital orchestrator—connecting the assets we have, using intelligence to create better outcomes, and earning the trust to play a bigger role in people's lives.

The real opportunity for telecom is not simply to carry the next wave of digital demand. It is to help more people participate in it. To help create a Philippines where families' dreams come true, businesses flourish, and the nation is admired.

To create a Globe of Good. ZTE TECHNOLOGIES

The 50G-PON Slowdown: Aligning Next-Generation Broadband with AI-Era Demands



Sun Peiqin
Fixed Network Product Marketing Manager, ZTE

Redefining the "Slowdown"

In early 2026, Dell'Oro Group revised its global broadband access equipment forecast downward, projecting a CAGR of just 0.3% from 2025 to 2030, with the market peaking at US$18.8 billion in 2028 before contracting. This outlook reflects operators' concerns over slowing average bandwidth growth and the challenge of sustaining margins in an increasingly competitive landscape. The 50G-PON rollout is progressing at a slower pace, with XGS-PON expected to remain dominant through the end of the decade.

This is not a technological failure. 50G-PON's core capabilities—single-wavelength 50 Gbps throughput, sub-100-microsecond latency, and 99.999% reliability—have already been field-validated. Rather, the global deceleration reflects a timing mismatch between the technology and the market signals operators are responding to, which remain anchored in the consumer-broadband paradigm, where ARPU growth has softened and demand for multi-gigabit residential services has yet to scale. This timing gap, however, makes the slowdown valuable: it opens a window to align 50G-PON not with yesterday's bandwidth race, but with the emerging demands of the AI era.

AI-Era Demands: Redefining 50G-PON's Value

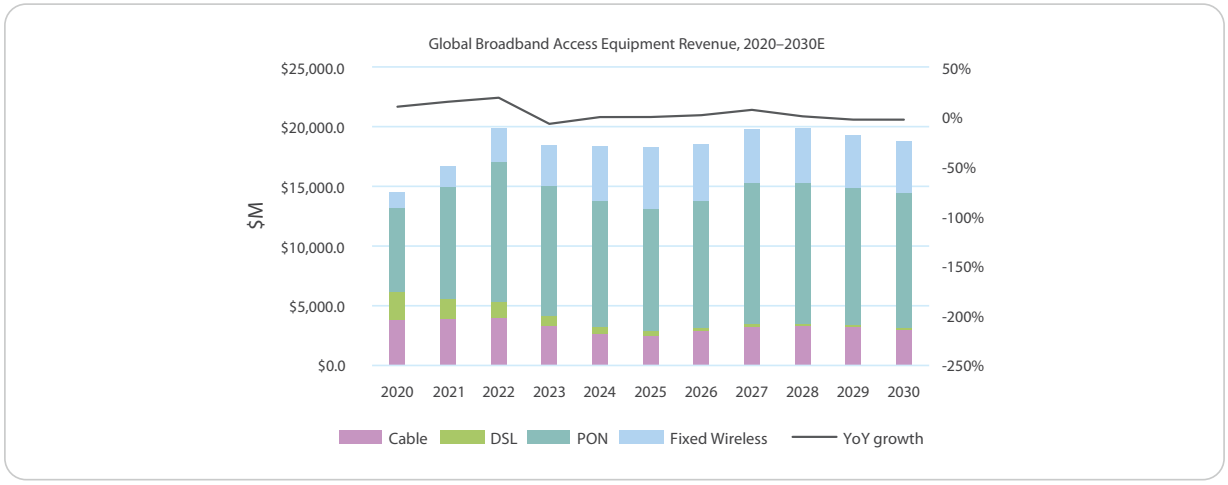
The true value of 50G-PON has yet to fully materialize in the residential broadband market. Beyond this market, its potential is taking shape across four distinct demand domains emerging across the global economy.

The Enterprise Market: From Office Connectivity to Production Control

Enterprise networking has been fundamentally transformed. The era of "good enough" connectivity for email, file sharing, and cloud desktops is giving way to demands for deterministic, ultra-reliable, and jitter-free communication across manufacturing, agriculture, energy, ports, and mines.

Key performance indicators have shifted: microsecond-level deterministic latency, 99.999% reliability, bounded jitter, and hard network slicing. 50G-PON's TDM heritage offers deterministic forwarding akin to legacy private lines—a physical-layer guarantee difficult to replicate wirelessly. Applications like remote autonomous mining, industrial AOI, real-time digital twins, and telesurgery ask not "how fast" but "how predictable."

Singapore's Singtel initiated a 50 Gbps XGS-PON trial in late 2025, positioning next-generation PON as the backbone for AI-driven enterprise and residential smart services. This is not merely a bandwidth upgrade but a



Source: Dell'Oro Group, July 2026

capability upgrade for the AI-enabled enterprise.

New Digital Economies: The Content Creation "Bandwidth Black Hole"

Beyond the enterprise, emerging content-centric industries are consuming bandwidth at an unprecedented rate, reshaping the upstream/downstream traffic ratio access networks were designed around.

Live streaming and MCN operations now demand upstream bandwidth in the hundreds of megabits per second. A single 4K stream requires 15–25 Mbps; leading MCN agencies simulcasting across multiple platforms can consume 500 Mbps or more. With 8K and 16K broadcasting becoming increasingly viable, demand for bandwidth is accelerating.

Cloud gaming and metaverse applications consume five to seven times the bandwidth of conventional streaming. According to an IIM report, high-bit-rate media traffic accounted for 9% of total streaming duration in 2024, rising to 14% in 2025. Grand View Research reports that the global live commerce market was valued at US$172.9 billion in 2025 and is projected to grow at a CAGR of 41% from 2026 to 2033.

What these digital economies have in common is high upstream bandwidth demand, pronounced traffic burstiness, and latency sensitivity. The traditional broadband model is ill-suited to these "producer users." 50G-PON's symmetric bandwidth (up to 25/50 Gbps upstream) and dynamic bandwidth allocation (DBA) mechanisms are architected for this shift—a structural transition from download-optimized to upload-empowered.

Compute Center Traffic: How AI Training Reshapes Flow Patterns

Fiber broadband remains a primary medium connecting compute centers to the outside world, though access networks remain dominated by residential subscribers and widespread congestion has yet to emerge. Nevertheless, the trajectory is clear: in AI-leading markets, XG-PON and XGS-PON shipments are rising steadily. According to the IIM report, global ONU shipments reached 872 million units in 2025, up 12.3% year over year, with XG-PON/10G-EPON accounting for 38% of the total. XGS-PON optical module shipments are projected to sustain a CAGR of 8–10% through 2030, and 10G PON OLTs accounted for more than 65% of total OLT deployments by early 2026—marking the access network's formal entry into the 10G era.

What is driving this shift? AI training and inference are reshaping data flows between compute centers and the edge. Traffic is no longer predominantly downstream-heavy and steady-state; instead, it is characterized by high peak bandwidth (e.g., that required by trillion-parameter models), bidirectional traffic symmetry (training upstream, inference downstream), extreme burstiness (e.g., during job initialization and checkpoint synchronization), and pronounced peak-valley cycles. According to a January 2026 TrendForce report, global AI server shipments are forecast to grow 28.3% year over year in 2026, with GPU-based servers accounting for an estimated 69.7% of shipments—and the data generated by these servers will need to traverse the access network.

50G-PON's 50 Gbps capacity and DBA agility are well

suited to this asymmetric, burst-prone regime. Today's absence of congestion does not obviate tomorrow's need—the steady rise in XG-PON shipments suggests that operators are already preparing for future demand.

Data Center Internal Networking

In addition to residential access, a new opportunity is emerging inside the data center. According to Omdia, PON in the data center and fiber LAN segments is gaining traction as a growth area. PON can provide a dedicated, secure out-of-band management channel for data center administrators, enabling device access and control even when the primary network fails. With hyperscale data centers multiplying globally, this represents a market opportunity for millions of PON ONTs per year, at significantly higher margins than those for residential CPE.

For both vendors and operators, this is a win-win. Vendors gain a high-margin customer segment beyond the saturated residential market. Operators can leverage their PON expertise to offer managed services to enterprise and data center clients. 50G-PON, with its deterministic low latency and hard isolation, is the natural fit for this demand.

The China Factor: Scale as a Catalyst for Global Maturity

China's role is pivotal to 50G-PON's global trajectory. The global 50G-PON market was valued at US$227 million in 2025 and is projected to reach US$2,126 million by 2032, growing at a CAGR of 38.2% during the 2026–2032 forecast period, with China emerging as a critical proving ground for the technology.

Chinese operators and vendors have jointly advanced both technology and deployment. ZTE introduced a three-generation coexistence solution for EPON networks, and in June 2026, China Telecom completed the world's first multi-vendor interoperability validation across three PON generations. China's Ministry of Industry and Information Technology initiated 168 10G optical network pilots in 2025; by April 2026, 136 had passed review, marking the shift to scaled deployment. Supply chain localization has reached approximately 90%, with second-generation equipment ready for mass deployment.

China's vast market and diverse application ecosystem—from smart factories to AI compute access—provide a unique "living laboratory." This process of refining technology through scale and validating business models through diversity is accelerating global supply chain maturity, reducing technical risks and cost barriers for deployments elsewhere.

Market Dynamics

50G-PON cannot overlook the role of FWA and LEO satellite technologies. According to Omdia's fixed broadband analysis, both technologies are gaining traction globally, with multiple avenues for capacity expansion. As traffic growth moderates, they remain well positioned in markets where FTTP is unavailable and wireline broadband is costly.

Where does this leave 50G-PON? FWA and LEO deliver "sufficient" bandwidth with speed and flexibility. However, fiber offers advantages in terms of determinism, jitter control, security, and service-level guarantees.

50G-PON's advantage is not speed but predictability. Industrial control, trading platforms, telemedicine, and automated production do not necessarily need "as fast as possible"; they need "as promised, every time."

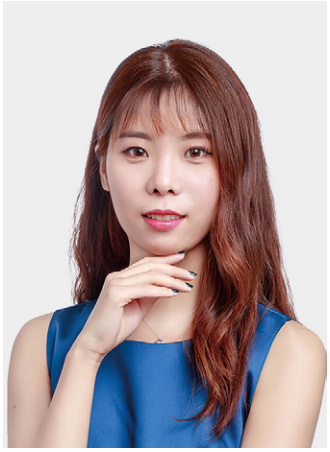
Operators should pursue a differentiated strategy: focus not on price per megabit, but on value per SLA for enterprise and vertical-industry applications.

A Slowdown for Precision

The global deceleration in 50G-PON deployment is not a cause for concern; it is a tuning interval that aligns technological capabilities with market demand. The AI era does not require the fastest possible pipe, but an intelligent access layer that is accountable, schedulable, and isolable—one that guarantees performance rather than merely promising it. 50G-PON is built for this role. Sustained XG-PON shipment growth signals that operators are preparing, even if they have not yet deployed 50G-PON at scale. The question is not whether 50G-PON will find its market, but when and for which applications.

International operators should use this window to experiment with vertical industries and deterministic service models rather than engage in the "speed race." The real opportunity lies in competing on certainty, the dimension that truly matters in the AI economy. When the market is ready, 50G-PON will be the connectivity foundation for the AI-enabled enterprise. The slower pace we see today is not a delay; it is an opportunity to get it right. ZTE TECHNOLOGIES

Wi-Fi 8: The Technology and Market Landscape



Zhang Feifei
Fixed Network Product Planning Manager, ZTE

The global Wi-Fi 8 ecosystem is currently transitioning from standard development to early industrialization—a critical window that will shape the competitive landscape over the next three to five years. Wi-Fi 8 is not merely a generational leap driven by peak throughput improvements; it is a system-level evolution focused on real-world user experience optimization. Its core value lies not in theoretical speed benchmarks, but in transformative capabilities across high-density connectivity, extended range, ultra-low latency, energy efficiency, and AI-powered edge intelligence.

Technology Evolution: Beyond Speed to System Intelligence

Wi-Fi 8 (IEEE 802.11bn) represents a paradigm shift from raw performance metrics toward holistic network intelligence. While previous generations prioritized maximum data rates, Wi-Fi 8 emphasizes:

- **Faster and more reliable medium- to long-range coverage:** Unequal modulation (UEQM), new modulation and coding schemes (MCS), longer LDPC codewords, enhanced long range (ELR), and distributed-tone resource units (DRU).
- **Reduced interference and increased system capacity through multi-AP coordination (MAPC), especially in dense device environments:** Coordinated beamforming (CO-BF), coordinated time-division multiple access (CO-TDMA), coordinated spatial reuse (CO-SR), and enhanced wireless roaming.
- **Improved QoS for real-time applications (e.g., gaming and voice):** Prioritized-enhanced distributed channel access (P-EDA) and low-latency indication (LLI).
- **More efficient use of spectrum resources to better mitigate interference and enhance performance:** Non-primary channel access (NPCA), dynamic subband operation (DSO), and dynamic bandwidth expansion (DBE).
- **Improved RF coexistence and energy efficiency, reducing interference on IoT:** Dynamic and periodic unavailability operation (DUO/PUO) and AP PUO.
- **Stronger security and privacy protection:** Secure control frames and protected management frames (PMFs).

These features collectively transform the Wi-Fi gateway from a passive data pipe into an active edge computing hub, capable of delivering personalized services based on user behavior, device context, and environmental conditions.

Chipset Landscape

The success of Wi-Fi 8 products will depend on timely access to mature, scalable, and feature-rich chipsets. The current market features four key players: Qualcomm, MediaTek, Broadcom, and Realtek, each pursuing distinct strategies.

Qualcomm: First-Mover Potential in Operator Markets

Qualcomm is positioned to lead the initial phase of Wi-Fi 8 commercialization, particularly in carrier-grade deployments. Its Dragonwing NPro A8 Elite platform (IPQ96), paired with QCN65/QCN66 RF solutions, offers:

- Flexible support for dual-band 4+4 or tri-band 4+4+4 configurations.
- Single-chip integration to reduce module complexity and bill of materials (BOM) costs.
- Native support for advanced multi-link operation (MLO) and beamforming algorithms.
- 2026 debut, aligned with European operator timelines.

MediaTek: Slight Lead in Tri-Band

MediaTek officially unveiled its Filogic 8000 Wi-Fi 8 family at CES 2026, making it one of the first tri-band 4+4+4 solutions to be introduced. MediaTek is prioritizing the high-end market; while its dual-band solution is expected to be released in 2027.

Broadcom: Premium Customization with AI-Enhanced PON SoCs

Broadcom takes a premium, vertically integrated approach, focusing on AI-enhanced PON System-on-Chips (SoCs) such as the BCM68xx series. These platforms integrate:

- 2–4 TOPS NPU for local AI processing.
- Carrier-grade security and QoS management.
- Tight integration with proprietary software stacks and RDK-B.

Realtek and Others: Focused on Cost-Sensitive Segments

Realtek and emerging Chinese fabless vendors target budget-conscious OEMs with cost-optimized Wi-Fi 8 solutions.

AI + Sensing as the New Battleground

Leading industry players have shifted their focus beyond connectivity performance, positioning Wi-Fi 8 gateways as intelligent home service platforms. At MWC 2026, several vendors showcased AI-integrated Wi-Fi 8 gateways with embedded NPUs enabling:

- **Local AI firewall:** Real-time threat detection and mitigation without cloud dependency.
- **Wi-Fi sensing applications:** Motion detection, presence sensing, and even fall detection for elderly care, all without cameras—preserving privacy.
- **Self-healing networks:** AI-driven diagnostics and automatic fault recovery to reduce customer care costs.

Examples include SDMC and Zyxel introducing XGS-PON AI gateways that integrate UWB and Wi-Fi sensing to enable non-intrusive home security and wellness monitoring. Zyxel's new AI-powered management solution, Zyxel One, utilizes AI to automatically identify and resolve Wi-Fi interference issues. Meanwhile, Qualcomm's FastConnect 8800 extends Wi-Fi 8 capabilities to mobile devices, integrating UWB, Bluetooth HDT, and Wi-Fi ranging for centimeter-level spatial awareness, paving the way for immersive AR/VR and smart home automation.

These developments point to a future in which home networking will be defined not just by throughput or coverage, but also by the fusion of connectivity, AI, and sensing—a triad we refer to as "Connected Intelligence."

Market Trends

Wi-Fi 8 adoption will follow a staged rollout pattern, characterized by:

Operator-Led Commercialization

Although the IEEE 802.11bn standard is still under development with finalization projected for 2028, several major operators are exploring Wi-Fi 8 Ready procurement. This gap between de facto readiness and formal standardization underscores

the importance of proactive technology pre-integration and prototype validation.

Escalating Technical Requirements

Operator specifications are evolving rapidly across several areas:

- **CPU performance:** DMIPS requirements now range from 12K to 20K, reflecting increased processing demands from AI and real-time analytics.
- **Port configuration:** Dual or quad 2.5GE LAN ports are increasingly being specified to support multi-AP mesh backhaul and high-bandwidth internal networks.
- **Software platforms:** Adoption of open frameworks like RDK-B and prpl is gaining momentum, enabling faster service deployment and third-party app integration.
- **AI functionality:** AI-related capabilities are gaining traction in the telecom industry, reflecting a gradual shift from hardware delivery to capability provisioning.

Product Strategy and Roadmap

Given these dynamics, our Wi-Fi 8 product strategy should be built on three pillars: technical foresight, architectural flexibility, and scenario differentiation.

At MWC 2026, ZTE unveiled its groundbreaking Linkpro® plus Wi-Fi 8 home networking solution, centered on the F8849Q, the industry's first CPE product to integrate XGS-PON 10G optical access with Wi-Fi 8 technology. This launch marks a pivotal step in ZTE's innovation across "optical access + wireless intelligence."

Looking ahead, we are preparing for the transition to 50G-PON, while continuing to advance multi-AP coordination and AI-enhanced spectrum management, and exploring Wi-Fi sensing APIs to enable third-party health and safety applications.

AI Integration: Building the Edge Intelligence Engine

A cornerstone of our Wi-Fi 8 strategy is the deep



integration of on-device AI. Key initiatives include:

- Unlocking richer channel state information (CSI) and device telemetry data.
- Integrating dedicated low-power NPUs or external AI accelerators.
- Developing local AI models to enable intelligent applications, including game mode auto-triggering based on application recognition, family member presence detection and personalized QoS, and real-time interference avoidance using predictive RF analytics.

The goal is to build a terminal-side AI engine that enables autonomous network optimization, transforming the gateway from a passive infrastructure component into a proactive service enabler.

From Connectivity to Cognitive Networking

Wi-Fi 8 is more than a new wireless standard—it is the foundation for cognitive home networks. The convergence of multi-link operation, AI processing, and environmental sensing redefines what a router can do.

This evolution creates an opportunity to establish a first-mover advantage in the AI-powered home networking era, turning Wi-Fi 8 into a catalyst for customer value creation. ZTE TECHNOLOGIES

From Bit-Centric to Token-Centric Operations, ZTE Redefines Fixed Network Business Value in the AI Era

Source: ZTE Official Website

- From "Bit Business" to "Token Business": As CaaS nears its value limit, operators must shift from moving bits to monetizing AI tokens—selling measurable AI outcomes via "Results-as-a-Service" (RaaS)
- With AI-ready cloud-edge-device networks and home AI hubs, operators can turn every home into a virtual data center, selling recurring intelligent services beyond broadband

ZTE showcased its latest fixed-network innovations at Network X 2026 held on October 13–15. During the event, Peter Hu, Vice President of ZTE, called global fixed-broadband operators to rethink the industry's growth model as AI agents move from concept to mass deployment. In a keynote titled "From Bit Business to Token Business: Reshaping Fixed-Network Operations," Hu noted that connectivity will increasingly be valued not by traffic alone, but by the intelligence it enables and monetizes.

Peter Hu said: "Bits are traffic. Tokens are intelligence. The incremental value of traffic is declining. Tokens are the hard currency of the AI era—directly monetizable." He added: "Connectivity is the foundation of this new world, and AI is the core. Our job is to make networks truly designed for tokens."

From CaaS to RaaS: A New Value Equation

For the past decade, fixed broadband grew on a proven "connectivity-as-a-service" model, with ARPU driven mainly by bandwidth, traffic and subscriber numbers. FTTx users rose from about 300 million in 2015 to roughly 1.2 billion in 2025, while household penetration reached 50.8% and download speeds increased nearly 13-fold. That model has taken the value of basic connectivity close to its limit.

In the AI era, the customer is no longer only the human user. It is also the intelligent agent. Connectivity must evolve from moving bits to orchestrating, serving and monetizing AI tokens. The future value equation becomes "results-as-a-service," or RaaS: ARPU is driven by bandwidth, traffic and tokens, multiplied by users—and layered with new dimensions such as scenarios, agents, and concurrent tasks.

This is more than a technical upgrade. It is a new revenue model. Operators can move beyond selling access and begin selling measurable AI outcomes.

Operators can Become the Super Hub of the Token Economy

Across the AI token value chain—production, transmission and application—operators hold advantages that equipment vendors and OTT players do not have in the same way: networks, applications, and ecosystem integration.

With a massive subscriber base and end-to-end connectivity, operators can support both the

production and delivery of AI tokens. They can also aggregate AI services and agents through their customer touchpoints, making them an indispensable "super hub" in the emerging token economy.

AI for Customers: A Strategic Window for Operators

On the customer side, AI is shifting toward hybrid device-cloud architectures. On-device agents will work with powerful cloud models to handle complex tasks, from voice and image understanding to real-time interaction. This creates three hard requirements for networks: strong uplink, low latency, and deterministic performance.

These requirements are not limited to smartphones. They apply to any AI agent scenario, from smart devices to smart homes. For fixed-broadband operators, this is a strategic opportunity to differentiate through AI-ready cloud-edge-device networks—turning connectivity into a platform for monetizable AI experiences.

AI for Homes: Every Home Becomes a Virtual Data Center

In the home, ZTE sees the operator's strongest recurring AI opportunity. Hu said every home will eventually become a virtual data center, powered by a "Home AI Agent."

This vision rests on four pillars: a large existing subscriber base that serves every family member; multimodal interaction through voice, image and touch; AI capabilities that drive devices while protecting privacy and security; and open ecosystem collaboration with device makers and large-model providers.

In practice, ZTE envisions a smart display or AI FTTR as the home's intelligent hub, with the Co-Claw agent platform as the engine and cameras, sensors and other connected devices as the home's nerve endings. Cross-brand interoperability through standards such as Matter enables coordinated services including device control, video analysis, security protection, and home data management.

The result is a new wave of home services: smart home control, elderly and child care, home security, AIGC creation, and eventually energy management and local lifestyle services. The operator's relationship with the home no longer ends at a broadband connection. It becomes a daily, recurring smart-service relationship—helping operators shift from selling broadband subscriptions to selling incremental intelligent services.



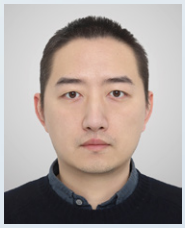
An AI-Ready Network Built for the Token Era

To make this shift possible, networks must be built with connectivity as the foundation and AI at the core. ZTE is advancing an integrated cloud-edge-device infrastructure that can support large-scale AI computing, efficient connections between distributed AI data centers, and AI-ready all-optical access.

For example, ZTE's next-generation data-center networking prototype has demonstrated significant reductions in latency and power consumption, helping AI clusters scale more efficiently. Its optical innovations are designed to connect distributed computing resources with high capacity, low latency and lossless transmission. At the access layer, AI-powered FTTR, OLT and OTN technologies provide deterministic experiences and proactive operations for the coming era of 10-gigabit and AI services.

"AI is no longer just an application on top of connectivity—it is redefining connectivity itself," said Hu. "As a continued leader in global fixed networks, ZTE will keep empowering networks with AI-native capabilities and work with operators worldwide to seize the opportunity of the shift from bits to tokens—upgrading broadband from a network that connects to an intelligent value network that can think, serve and monetize." ZTE TECHNOLOGIES

Agentic AI Smart Display: Redefining Connected Living



Zhang Ying

Marketing Director of Multimedia Products, ZTE

The smart home industry is shifting from command-based, reactive systems to proactive, context-aware intelligence driven by advances in agentic artificial intelligence (AI), large language models (LLMs), and ubiquitous IoT connectivity. Against this backdrop, ZTE's Smart Display, integrating 4K entertainment, whole-home IoT control, agentic AI, and comprehensive elderly-care capabilities, is redefining the relationship between people and their living environments.

The Evolution of the Smart Home

The smart home has long been a promise



This image is generated with the assistance of AI

deferred. For decades, consumers have been presented with visions of automated living—lights that turn on at the sound of a voice, thermostats that learn schedules, security systems that send alerts. Yet the reality has often fallen short.

Although smart home systems have evolved from simple automation to AI-driven ecosystems, user interaction often remains limited to rigid interfaces. The typical smart home is still a collection of disconnected devices, each requiring its own app, voice command, or manual intervention.

This is changing. In China, the smart home market is increasingly driven by the refurbishment of existing homes and the need for aging-in-place retrofitting. More significantly, the industry is witnessing a shift from "small and beautiful" individual products to "small and comprehensive" ecosystems, where value is created not by isolated devices but by integrated, context-aware experiences. The home is evolving from a collection of functional spaces to an environment that promotes emotional well-being.

At the heart of this evolution is agentic AI. Unlike traditional rule-based automation or even reactive AI assistants that respond only when summoned, agentic AI systems possess the capacity to reason about situations, detect anomalies, adapt accordingly, and communicate through natural language. They move beyond recording events to interpreting them, from passive data loggers to proactive decision-support tools. Recent research suggests that combining predictive machine learning with agentic LLM architectures enhances usability, transparency, and adaptability in smart home ecosystems.

At the intersection of these trends lies ZTE's Smart Display. More than a product launch, it embodies a vision for the future of human-machine interaction in the home.

The Technological Architecture of Proactive Intelligence

Beyond the Set-Top Box

The Smart Display defies simple categorization. It is simultaneously a 4K entertainment device, a universal IoT hub, and an agentic AI platform. This multifunctionality is intentional—a recognition that the future of home technology lies not in proliferating devices but in consolidating intelligence.

Supporting ZigBee, Wi-Fi, Bluetooth, and Matter protocols, the Smart Display can control smart devices across over 25 device categories and multiple brands. This interoperability is critical to overcoming fragmentation in smart home ecosystems. The Matter protocol is designed to improve compatibility across smart speakers, lighting, locks, cameras, sensors, appliances, and hubs. By embracing these standards, the Smart Display is positioned not as another siloed product, but as a unifying gateway—a single point of control for the entire connected home.

For telecommunications operators, the device offers customizable wake-word capabilities, allowing them to brand it as their own digital home gateway. This "hardware + subscription" service model provides operators with a pathway into the smart home market, while giving users access to services such as health management and educational companionship.

The Agentic Paradigm

What distinguishes the Smart Display from earlier smart speakers and hubs is its agentic architecture. The device operates on a principle that might be summarized as "the device perceives, the device acts"—a shift from reactive to proactive service delivery. This is achieved through a combination of on-device AI processing, cloud intelligence, and a rich network of sensors.

The system supports five proactive closed-loop services covering personal safety, home security, adaptive device control, all-age wellness, and community-government collaboration. Each loop completes a cycle of perception, reasoning, and action without requiring explicit user initiation.

This agentic approach aligns with broader industry trends. As one analysis notes, improvements in model capabilities and declining costs are accelerating the deployment of AI agents in the smart home sector, moving the industry from proof-of-concept to large-scale commercialization.

The distinction between obedient devices and those that understand user intent is becoming the new competitive frontier.

Reimagining Elderly Care: From Reactive Support to Proactive Guardianship

The Demographic Imperative

The global population is aging rapidly, with one in six people in the world projected to be aged 65 or over by 2050. This demographic shift presents a critical socio-economic challenge, highlighting the need for "aging in place" solutions that balance autonomy with safety. The concept of aging in place—the ability of elderly people to live independently and safely in their homes—has become the cornerstone of modern geriatric care.

Yet current approaches to remote care often fall short. Despite two decades of research, widespread adoption remains limited by high costs, intrusive sensing modalities, and a lack of contextual reasoning. Traditional camera-based care systems have limited ability to anticipate or respond to falls, medical events, or physical and cognitive changes.

A Comprehensive Health Companion

The Smart Display addresses this gap through an always-on health companion tailored to seniors. Through voice-first interaction, the device enables multi-turn consultations that provide intelligent triage and medication guidance. Seniors can use voice commands to initiate high-definition video consultations with physicians or book hospital appointments via integrated scheduling systems.

This voice-first approach is essential, as barriers to adopting digital health tools are not just technological but cognitive and physical. The Smart Display addresses these barriers through voice interaction and a senior-friendly interface with large fonts and simple menus.

The device also connects with smart health devices such as blood pressure monitors and glucose meters, automatically uploading readings to the cloud to create personal health records. Abnormal readings trigger alerts to users and family members, while weekly health reports deliver tailored dietary and exercise recommendations.

Safety Through Sensing

A key innovation is the integration of millimeter-wave radar for fall detection and activity tracking. Unlike camera-based systems that may raise privacy concerns, millimeter-wave radar offers a more privacy-preserving approach to detection.

The system detects falls or prolonged immobility, checks on the user, and, if no response is received, automatically alerts emergency services or designated family members. Combined with intelligent medication reminders and activity-pattern analysis, the Smart Display transforms passive observation into proactive care.

Research supports the efficacy of such approaches. Recent studies have reported fall detection models achieving over 87% accuracy with sensitivity exceeding 98%. More fundamentally, the future of elderly safety and care lies in the agentic AI systems that not only record events but also reason about them, detect and adapt to anomalies, and communicate with caregivers in natural language.

The Smart Display brings this vision into practice. It does not merely watch; it understands. It does not merely alert; it acts. It does all this while respecting the autonomy and dignity of the individuals it serves.

Five Closed Loops: The Architecture of Proactive Service

Personal Safety

Personal safety is enhanced through millimeter-wave radar that passively detects falls, motion anomalies, or deviations from daily routines, enabling timely intervention before an incident escalates. This represents a shift from reactive emergency response to predictive risk mitigation.

Home Security

Home security evolves from post-event alarms to pre-event prediction. By integrating gas, smoke, water-leak, and temperature sensors, the system identifies risks early. This is not security as surveillance, but security as prevention—detecting problems before they become crises.



Adaptive Device Control

Device control becomes truly zero-touch: lighting, heating, and appliances adjust automatically to ambient light, temperature, and humidity. The proliferation of remote controls—a source of frustration for users of all ages—is eliminated. The environment adapts to the person, not the person to the environment.

All-Age Wellness

Beyond elderly care, proactive health nudges, medication schedules, and follow-up reminders are provided for every generation—from children to working adults. Health becomes a family affair, with the system supporting wellness across the lifespan.

Community-Government Collaboration

Finally, community-government collaboration connects homes with local authorities and social services, automatically generating family service profiles, enabling timely inspections, assistance, and hazard remediation without requiring the user to ask for help. This represents a fundamental reimagining of the relationship between the home and the broader community—a vision of technology that dissolves barriers rather than erecting them.

Implications and Conclusion

The Smart Display, winner of the "Most Innovative Smart Home Experience" award at Network X 2025, exemplifies a broader transformation in how technology engages with human life. The shift from "users seeking services" to "services proactively reaching users" is more than a convenience; it redefines the relationship between people and their environments.

For telecom operators, the device offers a powerful, branded gateway to the smart home—a pathway to new revenue streams and stronger customer relationships. For users, it delivers reassurance, convenience, and a new benchmark for modern living.

Its broader significance lies in its potential to bridge generational gaps and narrow the urban-rural healthcare divide. As the global population ages and healthcare systems struggle to keep pace, solutions that enable safe, dignified aging in place will become increasingly critical.

The Smart Display is, in this sense, both a product and a proposition—a demonstration that agentic AI, thoughtfully applied, can make the home not just smarter but more caring. Whether tracking a senior's health, adjusting the environment for comfort, or connecting families with community services, the device embodies a vision of technology that serves human flourishing.

ZTE has not merely launched a product. It has articulated a vision—one in which the home becomes an active participant in the well-being of its inhabitants, anticipating needs, preventing crises, and enabling lives of greater independence and dignity. This is the promise of agentic AI in the connected home, and it is a promise that is finally coming to fruition. ZTE TECHNOLOGIES

Unlocking Opportunities in an Evolving STB Market



Ji Guofeng

STB Product Planning Manager, ZTE

The set-top box (STB) industry is experiencing significant cost changes driven by AI. Continuously rising memory chip prices are forcing operators to fundamentally rethink the business models of their STB operations. This price hike is not simply a cyclical fluctuation but a structural transformation fueled by surging demand for AI computing power. High-bandwidth memory (HBM) is crowding out production capacity for consumer-grade memory, driving up DRAM and NAND prices. Industry consensus indicates that this supply shortage is expected to persist at least until 2027.

For operators running TV services, adapting to these market conditions has become an urgent priority. Drawing on our tracking of multiple markets, including China, Latin America, and Southeast Asia, we have identified several strategic approaches, spanning configuration optimization, content monetization, and service expansion beyond the screen.

Configuration Optimization: Balancing Cost and User Experience

Hardware configuration optimization offers an opportunity to balance cost efficiency with user experience. Differentiated configuration approaches can be developed based on market demands. It must be emphasized that configuration optimization is not a "one-size-fits-all" approach, but rather a tailored selection of the most suitable mix based on local requirements for image quality, application ecosystems, and intelligence levels. More importantly, the true growth drivers lie in content monetization and terminal evolution, which are elaborated in the following sections.

Content Monetization: Evolving from a "Connectivity Pipe" to a "Service Hub"

The real breakthrough lies in unlocking the value of the existing user base. Operators can drive engagement and revenue growth through the rapid integration of content ecosystems. ZTE's all-in-a-box solution prominently features interactive motion-sensing services, offering over 1,500 fitness classes with ultra-low latency (less than 300 ms). It enables real-time group workouts with friends, featuring performance scoring and rankings to create an immersive social fitness experience. It also includes over 10 motion-sensing games across categories such as dancing and boxing, catering to all age groups. Operators can benefit from user subscription revenue sharing, generating an ARPU of approximately US$2 per user per month with gross margins of up to 50%.

Furthermore, ZTE offers over 400 free ad-supported streaming TV (FAST) channels that can be tailored to different markets. Operators can benefit from advertising revenue-sharing arrangements through this ad-supported service. With no upfront investment required and only simple deep-link integration needed for rapid deployment, FAST services can generate incremental advertising revenue while enhancing user stickiness. Currently available in Malaysia, the Philippines, Brazil, and other markets, the service has demonstrated strong user engagement: more than 70% of users watch FAST channels monthly, average daily viewing time exceeds 12 minutes, and annual advertising revenue averages approximately US$1 per user.

Adopting an "asset-light, fully managed" cooperation model allows operators to launch popular services without building their own content infrastructure. This approach boosts user



activity and stickiness while creating additional revenue streams.

Expanding Beyond the Screen: From STB to Home AI Hub

Looking ahead to the medium and long term, the ultimate evolution of the STB is not merely as a TV accessory, but as a home AI hub—the central nervous system of the smart home. By integrating AI agents, IoT control, home security, video calling, childcare, fitness, and entertainment into a single platform, operators can build a truly differentiated competitive moat.

ZTE's "All in Smart Display" developed in partnership with a major Chinese operator, exemplifies this direction. This device features a 1.2 TOPS AI computing chip, 2 GB RAM, 32 GB storage, a 360° night-vision camera, and a dual-microphone far-field voice system. It supports five core scenarios: AI-enhanced video viewing, AI calling, AI-powered detecting, AI-based home appliance control, and AI agent conversations. These capabilities position the device as a "Content + Interaction + IoT + AI" quad-play gateway.

By the end of the first half of 2026, cumulative shipments of this product had exceeded three million units. The subscription model includes a base package, covering the device, video membership, calling, security, and AI care, and optional value-added packages for services such as healthcare and education.

The essence of this model is to transform the terminal from a "one-time hardware cost" into a source of "recurring service revenue." Users are paying not just for the device but for the ongoing value of security, care, health, and education. For operators, this is not just an optimization of the revenue structure; it's a strategic opportunity to evolve from a connectivity provider into a gateway for home services.

Conclusion

The memory price surge is both a short-term cost pressure and a long-term existential challenge. In the short term, configuration optimization can help protect the bottom line. However, the true growth opportunity lies in activating the existing user base through content monetization and tapping into the smart home market through terminal evolution. ZTE TECHNOLOGIES

Empowering Fiber Networks: ZTE's Light ODN 3.0 Revolutionizes FTTH O&M



Yang Yang
Fixed Network Product Planning Director, ZTE

As global demand for ultra-high-speed fiber broadband continues to surge, FTTH deployment has become a strategic priority for telecom operators worldwide. According to Analysys Mason, the number of homes passed by FTTH networks worldwide was forecast to grow at an annual rate of 6–7% between 2021 and 2026, reaching a staggering 1.56 billion—a milestone in the global digital transformation journey. As fiber networks expand, operators face growing operational challenges, particularly in resource management, service provisioning, and network O&M.

From Passive to Intelligent: The Evolution of ODN

Traditional optical distribution networks (ODNs) often rely on manual operations, inaccurate records, and fragmented data, resulting in repeated site visits, prolonged fault resolution times, and inefficient resource utilization. In some cases, over 20% of resource data may be inaccurate or outdated, while more than 50% of O&M operations involve repetitive checks caused by unreliable records. Troubleshooting a single fault can take 3–6 person-hours due to segment-by-segment inspection. Therefore, the evolution of ODN toward greater intelligence must prioritize accuracy, efficiency, and proactivity—the core principles embodied in ZTE's Light ODN 3.0.

Light ODN 3.0 (Fig. 1) is a next-generation ODN solution that transforms passive fiber networks into intelligent, digital, and self-optimizing infrastructure. Evolved from Light ODN 1.0 and 2.0, Light ODN 3.0 elevates fiber network operations through enhanced resource management, automated ticketing, and smart O&M, significantly reducing the operational complexity of FTTH networks.

Core Capabilities of Light ODN 3.0

Light ODN 3.0 is built on three fundamental capabilities: accurate resource management, closed-loop ticketing, and easy O&M. Each capability is redefined through digitalization, automation, and artificial intelligence (AI).

Accurate Resource Management: Building a 100% Visible Fiber Infrastructure

At the heart of the intelligent ODN is a precise, up-to-date, and fully digitalized resource foundation. Light ODN 3.0 achieves 100% resource visibility and accuracy through:

- **Auto-synchronization of resources:** Seamless integration with existing OSS/BSS, inventory, and EMS systems via standard APIs ensures real-time data synchronization. Intelligent means such as fiber fingerprint solution enable passive network visualization. All optical resources, from OLTs to ONUs, are automatically uploaded and verified, both during initial deployment and through post-construction updates.
- **End-to-end optical resource tracing:** Every component—including feeder boxes, distribution boxes, splitters, drop fibers, and ONTs—is tagged with a QR code or barcode. On-site engineers use a mobile app to scan and register connections, ensuring accurate topology capture without manual errors.
- **Infrastructure visualization:** Fiber fingerprint

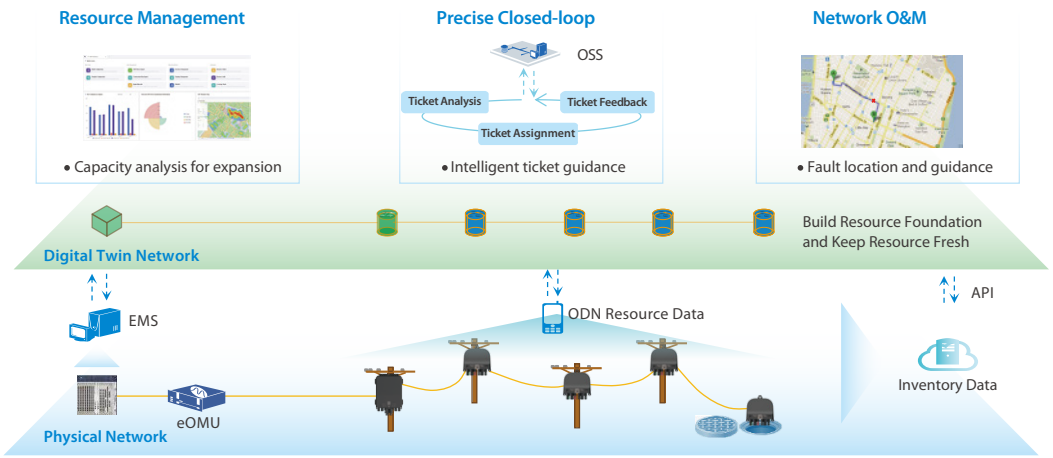


Fig. 1 ZTE's Light ODN 3.0 solution.

solution enables ODN topology visualization. It automatically presents the two-level splitting relationship among OLTs, splitters and ONUs, supporting dynamic statistics on splitter port utilization and available expansion capacity. Beyond fiber links, Light ODN 3.0 offers comprehensive management of infrastructure, including handholes, poles, and conduits. This visibility supports more effective capacity planning, disaster recovery, and lifecycle management.

- **AI-driven network expansion strategy:** The system uses AI algorithms to analyze penetration rates and port utilization and identify optimal areas for expansion. Zones with a utilization rate of 95% or higher are flagged in red, while areas with a utilization rate of 60% or lower are highlighted for marketing initiatives. This data-driven strategy avoids overbuilding and optimizes investment.

With Light ODN 3.0, operators transition from manual, error-prone record-keeping to automated, accurate, and strategic infrastructure management.

Efficient Ticketing: From Reactive Response to Guided Workflows

In traditional ODNs, customer complaints or system alarms generate tickets that require manual analysis, team assignment, and on-site inspections. This leads to duplicated work and long resolution times.

Light ODN 3.0 streamlines the entire ticketing lifecycle:

- **Intelligent ticket analysis and dispatch:** Upon receiving an alarm or trouble report, the system analyzes the status and performance histories of related OLTs and ONTs, as well as ODN topologies, to determine the root cause and probable fault section. It then intelligently assigns the ticket to an appropriate maintenance team based on workload, expertise, and geographic proximity.
- **Automated ticket guidance:** Engineers receive precise fault location information directly through their mobile app, along with GIS navigation to the exact cabinet or splice point, topology diagrams, and step-by-step troubleshooting instructions. This eliminates blind searching and reduces mean time to repair (MTTR).
- **Pre-service provisioning checks:** Before dispatching a technician for activation, the system automatically verifies port availability, fiber continuity, and optical power levels. Resources can even be pre-selected and locked to prevent conflicts, significantly improving first-time visit success rates.
- **End-to-end ticket tracking:** The entire ticketing

process from generation to closure is fully digitized and traceable. Operators gain end-to-end visibility into ticket status, engineer performance, and service quality, enabling continuous optimization.

Results speak for themselves: Light ODN 3.0 improves service provisioning efficiency by 80%, reduces repeated site visits by 50%, and significantly increases first-time fix rate.

Easy O&M: Proactive, Predictive, and Precise

While traditional O&M is reactive, Light ODN 3.0 enables a proactive and predictive maintenance model powered by data fusion and AI analytics.

The system integrates data from multiple sources, including real-time EMS data, historical performance trends, physical ODN topology and infrastructure data, and on-demand test results from intelligent detection units. Using this rich dataset, Light ODN 3.0 performs the following activities:

- **Automatic fault demarcation:** When a user reports poor service or an OLT raises an alarm, the system correlates data across the network to instantly identify whether the issue lies in OLTs, feeder cables, distribution cables, drop cables, or ONUs. Faults are pinpointed within three minutes, while manual operation often takes over 10 minutes.
- **Root cause analysis and GIS location:** Instead of blindly checking each ODN section, engineers are guided directly to the fault point via GPS navigation. In real-world deployments, fault location accuracy exceeds 90%, while MTTR is reduced by 28.6% and engineers' walking distances by hundreds of meters.
- **Proactive quality monitoring and warning:** The system leverages historical weak-light data, performance degradation patterns, and multi-wavelength testing to predict potential service disruptions. Warnings are generated before outages occur, allowing preventive maintenance.
- **Network health diagnostics:** Advanced algorithms, including wavelet noise filtering, regression modeling, and cluster analysis, help build an optical characteristics "health database." This enables automatic identification of issues for fiber bending, connector degradation, and splice loss.

This shift from "fix after failure" to "predict and prevent" transforms O&M from a cost center into a value engine.

Digital Twin: Unifying Physical and Logical Networks

A cornerstone of Light ODN 3.0 is the digital twin of the ODN—a virtual, real-time representation of the physical fiber network. It integrates topological structure, geolocation data, resource attributes, and performance metrics.

This unified model supports multiple advanced functions:

- **Capacity visualization:** Color-coded heatmaps show port utilization, helping avoid over-subscription.
- **Service feasibility checks:** Before activating a new customer, the system checks available paths and guarantees quality.
- **Change impact analysis:** Any planned modification can be simulated in the digital twin to assess risks.
- **Automated reporting:** Exportable reports in KMZ, CSV and XLS formats facilitate audits, planning, and regulatory compliance.

By creating a single source of truth, the digital twin breaks down data silos and bridges the gap between planning, deployment, and operation teams.

Hardware Innovation: Designed for Speed and Simplicity

Light ODN 3.0 is not just software—it's a fully integrated solution combining smart platforms with optimized hardware.

ZTE has refined its pre-connectorized products to support all deployment scenarios. With 28% smaller form factors, distribution boxes save space and enable rapid deployment. From large hub closures to mini drop boxes, each component is



This image is generated with the assistance of AI

designed for quick, tool-free installation, enabling zero-splice deployment.

The hardware advancements, combined with digital management, allow operators to deploy fiber networks 30–50% faster than with traditional methods.

Real-World Impact: Case Study from an Operator

One of ZTE's partners, an East African operator managing over 90 OLTs and serving more than 40,000 households, faced significant O&M challenges due to legacy ODN infrastructure. Manual record-keeping has led to frequent service delays, inaccurate port assignments, and high technician travel costs.

After deploying Light ODN 3.0, resource accuracy has improved from below 80% to 100% through auto-synchronization and QR code-based verification. Fault diagnosis time has dropped from 10 minutes to under three minutes thanks to AI-powered root cause analysis. Precise GIS-guided navigation has reduced average troubleshooting time per incident from 2.2 hours to 1.4 hours, while service provisioning efficiency has increased by over 80%.

The operator now plans its network expansions based on AI-generated insights, ensuring optimal ROI and future-ready scalability.

The Road Ahead: Toward Autonomous ODNs

Having established over 80 operator partnerships worldwide, completed more than 120 turnkey projects, and deployed ODNs passing over 35 million homes, ZTE is demonstrating the value of its Light ODN 3.0 solution across diverse markets, from mature economies to fast-growing developing regions.

In an era defined by digital connectivity, ODN can no longer be treated as a dumb pipe but as an intelligent, visible, and manageable asset. ZTE's Light ODN 3.0 transforms the passive fiber network into a dynamic, data-driven system that empowers operators to deploy faster, operate smarter, and deliver better experiences. With 100% resource accuracy, efficient digital workflows, and proactive O&M, Light ODN 3.0 sets a new benchmark for FTTH networks worldwide.

Looking ahead, this transformation lays the foundation for autonomous networks—self-discovering, self-diagnosing, and self-healing infrastructure. By digitizing passive components, unifying data across domains, and applying AI and automation at scale, Light ODN 3.0 lays the foundation for this future. It's not just an upgrade—it's a paradigm shift.

The future of fiber is light. The future is intelligent. ZTE TECHNOLOGIES

Building Smart Campuses with All-Optical Networks: POL + WLAN in Practice



Li Haibin

Fixed Network Product Planning Director, ZTE

In the wave of digital transformation, traditional campus networks face bandwidth bottlenecks, fragmented operations, and complex cabling. The passive optical LAN (POL) + WLAN all-optical campus solution adopts a simplified OLT + optical AP architecture to deliver ultra-high-bandwidth access, streamlined cabling, and intelligent, unified operations. The 50G-PON all-optical network deployment at Shandong University demonstrates the solution's value in higher education, providing a cost-effective, efficient, and replicable model for smart campus development.

Challenges of Traditional Networking and the Rise of All-Optical Convergence

Digital services such as 4K/8K video, VR/AR immersive experiences, live interactive classrooms, cloud desktops, and IoT terminals are reshaping campus teaching, research, and management models, placing higher demands on network bandwidth, latency, and stability. However, traditional Ethernet-based wireless AC + AP solutions rely heavily on copper cabling, which limits transmission distances, while traditional PON all-optical networks lack integrated wireless capabilities. The separation of wired and wireless networks has become a critical bottleneck to campus digital transformation.

Based on surveys of multiple universities, campus networks face six pain points: bandwidth bottlenecks, high cabling costs, complex network architecture, inflexible deployment, power supply constraints, and fragmented wired/wireless operations.

As a new-generation all-optical and wireless-integrated access solution, POL + WLAN addresses four key requirements: ultra-high-bandwidth access, optimized construction costs, simplified network operations, and flexible deployment. It supports various scenarios including university dormitories, teaching buildings, libraries, and hospitals. The solution adopts a simplified two-tier OLT + optical AP architecture, combining the high-speed transmission advantages of PON with the comprehensive coverage capabilities of AC + AP to create a high-quality network foundation for campus digital transformation.

Core Technical Principles

Simplified Networking Architecture

This solution innovatively adopts an OLT + optical AP architecture (Fig. 1) to achieve deep integration of the physical and wireless layers across the entire network.

- **Core layer: OLT**

OLT is deployed in the campus core equipment room, providing unified management of both wired and wireless services, intelligent bandwidth scheduling, unified user authentication and security policy distribution, and high-speed interconnection with the campus backbone network. Its combo optical module supports GPON/XGS-PON/50G-PON coexistence, enabling compatibility with existing networks and future bandwidth upgrades.

- **Access layer: Optical AP**

The optical AP is a key innovation, integrating an optical network unit (ONU) with a wireless AP

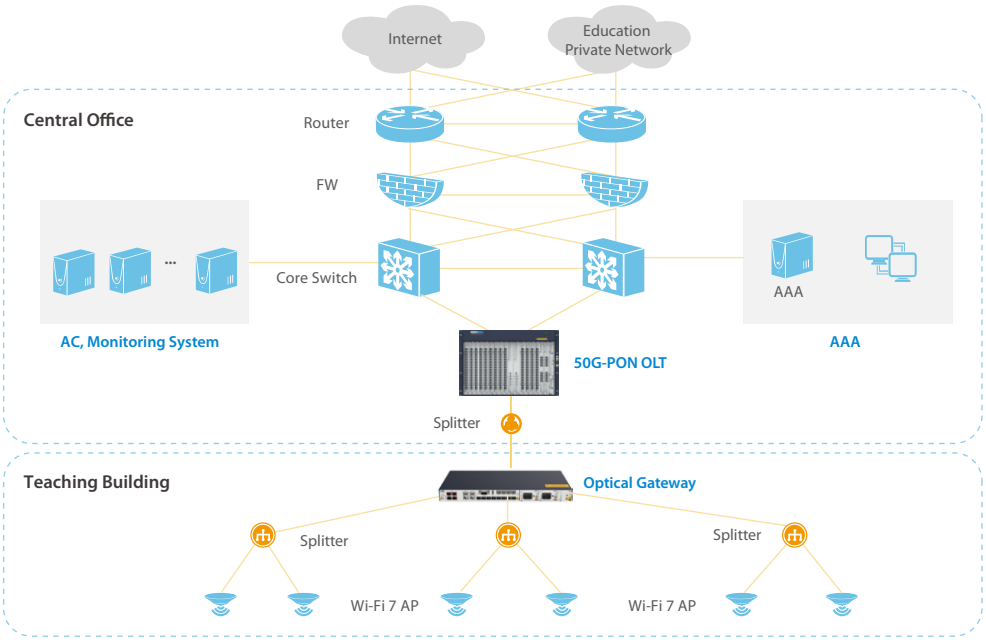


Fig. 1 POL + WLAN solution.

module and connecting directly to the OLT through the ODN. A single device provides Wi-Fi 6/7 coverage, wired Gigabit ports, a voice telephone interface, and multi-service access capability.

- **Transmission medium: Optical fiber + passive splitting**

Fiber or opto-electric hybrid cables are used throughout the network backbone and branch links, leveraging passive splitters to achieve point-to-multipoint transmission. Deployed in each floor's ELV room, the splitters distribute optical signals from the OLT to terminal devices without requiring additional power.

Deep Wired-Wireless Integration

The core breakthrough of this architecture is breaking down the barriers between wired and wireless technologies, enabling unified control, authentication, data, and operations planes.

Multi-Service Bearer Capability

Through isolation technologies such as QinQ and VLAN, a single network can simultaneously carry differentiated services, including internet access, voice calls, HD video conferencing, and IoT, meeting the comprehensive communication needs of smart campuses and effectively reducing total cost of ownership (TCO).

Key Technology Advantages: Reshaping Networks Across Five Dimensions

Ultra-High Bandwidth, One-Time Cabling, and Long-Term Evolution

Leveraging the scalable bandwidth of PON, the solution achieves "no-bottleneck" network evolution. It supports symmetric 2.5 Gbps/ 10 Gbps upstream and downstream rates, while 50G-PON delivers up to 50 Gbps access, providing 10 to 50 times higher single-link bandwidth than traditional copper-based access networks. With a fiber lifespan of up to 30 years, bandwidth expansion requires only upgrades to OLT service boards and front-end optical APs. It also supports demanding applications such as 4K/8K video-based teaching, VR/AR experiments, and industrial IoT.

Streamlined Cabling, Significant Lower Lifecycle Costs

All-optical networking reduces material costs, simplifies installation to shorten construction cycles, and reduces long-term O&M costs.

Integrated Visualized Operations, Unified Wired/Wireless Management

OLT's integrated AC capability enables a unified management platform, breaking traditional operational silos through full network visibility, unified configuration and scheduling, and intelligent fault localization.

Simplified Two-Tier Network Architecture, Enhanced System Stability

The traditional multi-tier architecture (core–aggregation–access–PoE switch–AP) is simplified to a two-tier OLT–optical AP architecture. The number of intermediate devices and transmission links is sharply reduced, significantly improving overall system stability and achieving 99.99% availability.

Remote Powering via Opto-Electric Hybrid Cable, Green and Easy to Deploy

PON point-to-multipoint architecture significantly reduces optical modules usage and overall energy consumption, aligning with the green and low-carbon requirements of campus construction. The OLT transmits optical signals and 48V DC power through opto-electric hybrid cables over distances of up to 800 meters. This eliminates the need for local power supplies at optical APs, enabling flexible deployment in remote buildings or areas without local power access.

Case Study: 50G-PON Powering Shandong University's All-Optical Network

Project Background

Shandong University operates campuses in Jinan, Qingdao, and Weihai, serving over 70,000 students. The graduate dormitory building at the Qianfoshan Campus in Jinan accommodates over 1,000 graduate students. Growing digital demands have exposed the limitations of the legacy network, making an upgrade increasingly urgent.

The legacy network suffers from severe bandwidth insufficiency, weak signal coverage in dorm rooms and corridor corners, poor roaming between dormitories and public areas, complex network operations, and potential safety hazards from aging equipment.

Guided by the core principle of "50G to the building, 10G to the bedside," the project team adopted an integrated solution combining 50G-PON and intelligent wireless technology to build a 10G all-optical network architecture for the dormitory building.

Architecture Design: Three-Tier, End-to-End All-Optical Network

The project adopts an "OLT–50G-PON gateway–10G optical AP" three-tier topology, enabling all-optical direct connectivity from the core equipment room to dormitory terminals:

- **OLT layer (core equipment room):** Deployed at the campus network center, interconnected with the backbone network via WDM technology. The OLT serves as the core of the network and can be upgraded with built-in computing boards to integrate AC controller functionality, enabling unified management of all campus optical APs and intelligent network-wide bandwidth scheduling.
- **50G-PON gateway layer (per building):** Acts as the building's network aggregation entry point, connecting northbound to the OLT at 50G and southbound to optical APs at 10G. The gateway connects to optical APs via passive splitters deployed in the ELV room on each floor, enabling uniform optical signal distribution.
- **Independent AC wireless controller layer (campus network center):** Deployed as standalone hardware device alongside the OLT, the AC centrally manages all campus optical APs, providing channel planning, load balancing, user authentication, and seamless roaming. Through standard interfaces, it exchanges control information with the OLT, forming a collaborative mode in which the OLT handles

wired switching while the AC handles wireless control.

- **Optical AP layer (dormitory terminal):** Integrates ONU and AP capabilities, supporting a symmetric 10G PON optical uplink port, four GE Ethernet ports, and one voice interface. Compliant with Wi-Fi 7 standards, the dual-band, four-spatial-stream AP supports 160 MHz bandwidth in the 5 GHz band and uses advanced modulation techniques to deliver aggregate wireless data rates of up to 3.6 Gbps.

Outcomes and Value

Following implementation, the dormitory network delivered significant improvements in bandwidth performance, user experience, operational efficiency, and cost-effectiveness:

- **Bandwidth performance leap**

50G-PON enables a Gigabit-class wireless experience, significantly increasing data transmission speeds. 4K video conferencing for academic meetings supports stable 60 fps streaming with a latency of less than 30 ms.

- **Comprehensive wireless optimization**

Building-wide wireless coverage achieves signal strength of at least -65 dBm, eliminating previously identified "dead zones." The roaming success rate reaches 100%, enabling uninterrupted connectivity for online meetings and research equipment control when users move between dorms and public areas. A single AP supports up to 50 concurrent devices, delivering a smooth experience even during peak hours.

- **Revolutionary operational efficiency improvement**

Fault localization time is reduced from hours to minutes, dramatically decreasing mean time to repair (MTTR). Parameter configuration via the unified platform significantly improves wireless channel adjustment efficiency, while remote reboot and diagnostic functions greatly reduce on-site maintenance needs, significantly lowering labor costs.

- **Significant economic benefits**

Compared to traditional renovation solutions, upfront construction investment is reduced by over 40%. With a service life of up to 30 years, optical fiber supports long-term return on investment and reduces the need for periodic replacement of equipment and cables.

Technical Summary and Industry Outlook

The Shandong University case demonstrates the key benefits of the 50G-PON + OLT + optical AP all-optical solution, including a smooth evolution to next-generation access technologies, an enhanced Wi-Fi 7 experience, lower lifecycle TCO, simplified operations, flexible deployment with power delivery over distances of up to 800 meters, and improved energy efficiency and sustainability.

With mature technology and standardized deployment practices, the solution is well positioned for large-scale adoption across universities. It supports diverse scenarios, including dormitories, teaching buildings, libraries, and hospitals; incorporates plug-and-play APs with templated configuration; and enables GPON/XGS-PON/50G-PON protocol coexistence for smooth integration with existing networks. It also features a complete ecosystem, with ZTE providing OLTs, gateways, optical APs, and network management systems.

Outlook: All-Optical Networks as the Foundation of Digital Campuses

As digital transformation in education accelerates, new scenarios such as AR/VR teaching, digital twin campuses, and large-scale IoT will place ever-increasing demands on network bandwidth, latency, and reliability. With advantages in ultra-high bandwidth, simplified architecture, unified operations, and energy efficiency, the POL + WLAN all-optical solution will become a preferred technology choice for smart campus network construction.

In the future, we hope more universities will embrace all-optical network technology to build high-quality network infrastructure, creating smarter, more efficient, and smoother digital learning and research environments for faculty and students. ZTE TECHNOLOGIES

AI Interactive Flat Panel: Beyond the Meeting Room, Empowering Diverse Scenarios



Liu Jiahui

Multimedia Product Planning Manager, ZTE

Over the past decade, interactive flat panel displays (IFPD) have evolved from projector alternatives to meeting room essentials. Today, as work extends beyond traditional offices into home and hybrid scenarios, online and offline learning are deeply integrated into classroom teaching, and demand for digital companionship among seniors continues to grow, single-purpose conferencing devices can no longer meet diverse user needs.

ZTE has launched an AI Interactive Flat Panel. The device is built on ZTE's self-developed AI agent, cross-device collaboration architecture, and scenario-oriented feature sets, enabling it to break through the interaction limitations of traditional displays. Designed for multi-industry, multilingual, and cross-border applications, the smart display is widely deployed in key sectors, including smart office, smart education, and smart healthcare.

Smart Office: Boosting Collaboration

The office represents the primary application scenario for the AI Interactive Flat Panel. To address common pain points such as cross-border team collaboration, meetings with multiple parallel agendas, and difficult minute-taking for lengthy meetings, the panel's built-in Xiaoxing agent creates a closed-loop value chain covering the entire meeting cycle: before, during and after meetings. Its core capabilities encompass four key aspects.

- **Universal wake-up and multi-turn dialogues.** The Xiaoxing agent can be activated from any screen on the panel using voice commands or the voice pen button. It also supports context-aware multi-turn Q&A in both Chinese and English. The agent accurately understands user intent throughout continuous interactions, greatly reducing redundant operations.
- **Local transcription and high-fidelity recording.** Edge-side speech-to-text technology keeps meeting data within the local environment, helping meet data compliance requirements while maintaining low transcription latency. Based on minute templates, transcripts can be automatically structured to deliver actionable meeting outcomes.
- **Multilingual subtitle translation.** The panel supports real-time two-way translation for multilingual subtitles with an accuracy exceeding 95%. It breaks down communication barriers for cross-border teams, enabling participants who speak different native languages to follow meetings with real-time translated subtitles, while significantly reducing travel and simultaneous interpretation costs.
- **Speaker identification.** Powered by voiceprint recognition technology, the Xiaoxing agent can accurately distinguish between different speakers and automatically generate annotated minutes detailing who spoke, when, and what was said. This provides high-value data assets that support topic classification, action-item tracking, and responsibility allocation.

Beyond the AI agent, the flat panel offers two core collaboration features: whiteboard collaboration and screen casting. The whiteboard supports multi-user simultaneous writing, shape recognition, and one-click export of written export while screen casting enables flexible content sharing from personal

devices. The deep integration of these two features with the Xiaoxing agent transforms the flat panel from a display terminal into a collaboration hub.

Smart Education: Reshaping Classrooms

The education segment serves as a key growth area for the AI Interactive Flat Panel, serving K-12 schools, higher education institutions, and training organizations. Unlike traditional panels that rely on external software and screen casting, the panel leverages native Google Classroom compatibility to integrate the large screen device into the teaching platform. Its key value lies in two core modules of Google Classroom:

- First, Classes. Teachers can manage all their classes and courses from a single panel. Student rosters, class calendars, and course materials are automatically synchronized with Google Classroom. This eliminates the need to switch between multiple platforms, making teaching management more efficient.
- Second, Classwork. Assignment distribution, submission, review, grading and progress tracking are completed in Google Classroom. Teachers can create assignments, set due dates, and share attachments such as Google Docs and Sheets through the platform. Students can submit their assignments via the interactive panel or other devices, while teachers can provide grades with annotations and individual feedback. The system automatically aggregates scores and generates a learning progress dashboard.

Furthermore, teachers can use AI tools for smart note tracking and real-time highlighting of essential teaching points. Written content can be saved with one click and shared via QR codes for post-class review. With a streamlined UI and multilingual support, the panel caters to teachers and students worldwide, facilitating cross-border resource sharing and the global adoption of high-quality teaching practices.

Intelligent Healthcare: Conveying Warmth Through Technology

Population aging is a global challenge, but it also



presents a blue ocean opportunity for large-screen terminals. Positioned as a "wellness companion" in healthcare scenarios, the panel combines voice wake-up, visual recognition, and touch feedback to provide an engaging, gamified rehabilitation training system. It also supports remote video companionship, thereby creating new service opportunities for nursing homes, community rehabilitation centers, and home-based elderly care.

The gamified training solution comprises three distinct categories: first, cognitive training, featuring adaptive, lightweight tasks such as memory matching, reaction challenges, and logical reasoning; second, physical interaction, enabling gesture recognition and turn-based multi-player workouts through the panel's camera and sensors; and third, interest-led activities, facilitating sustained engagement in wellness training.

From AI agents enhancing the efficiency of cross-border meetings to classroom innovations empowering digital education and smart healthcare conveying human warmth, ZTE's AI Interactive Flat Panel fully utilizes the screen to seamlessly integrate hardware performance with ecosystem intelligence. It is not merely a display, but the pivotal hub driving the leap in digital productivity across diverse scenarios. ZTE TECHNOLOGIES

Memory Supercycle: AI-Driven Structural Transformation



Chen Qiuji

Fixed Network Product Planning Manager, ZTE

In 2026, the global memory industry is entering a once-in-a-decade supercycle, with prices of DRAM and NAND flash memory surging multiple times. This round of price hikes is not a short-term fluctuation caused by supply-demand imbalance. Instead, it represents a structural industry transformation jointly fueled by explosive AI computing demand, structural capacity adjustments, and strategic shifts among leading manufacturers. The surge in upstream chip prices has propagated to end-user devices, driving substantial cost increases for home terminals. Both telecom operators and equipment suppliers are facing dual pressures from rising supply chain costs and operational challenges.

Price Hike Drivers: AI Demand and Market Concentration

The core driving force behind the ongoing increases in memory prices is the skyrocketing market demand for AI computing brought by the large-scale commercial deployment of artificial intelligence technology. J.P. Morgan forecasts that the high bandwidth memory (HBM) bit demand will achieve a 63% compound annual growth rate from 2026 to 2028. The wafer resources consumed in HBM chip manufacturing are three to four times higher than those for conventional DRAM products. This has significantly taken up the production capacity that would otherwise have been allocated to general-purpose consumer memory chips.

The global memory market has long been highly concentrated, with Samsung, SK hynix, and Micron collectively accounting for the vast majority of global memory chip supply. Faced with high-margin, long-term HBM orders from AI companies, these leading manufacturers have adjusted their product portfolios and capacity allocation strategies. They have reduced or even phased out the production of low-profit mature products such as DDR3 and DDR4, reallocating wafer capacity and advanced manufacturing resources toward high-value-added HBM chips, further reinforcing the market's concentrated supply structure.

Meanwhile, they have strictly controlled the pace of production capacity expansion, prioritizing moderate capacity expansion targeting high-end HBM products. As of 2026, their HBM production capacity for 2027 has been fully allocated. In addition, 70% to 80% of their newly added high-end production capacity has been pre-booked under 3–5-year supply contracts. This has contributed to a long-term structural shortage of high-end HBM chips and a widening supply shortfall in traditional general-purpose memory chips, supporting the sustained upward trend of memory prices.

Price Upturn Cycle: Continued Momentum Until at Least 2027

Global top-tier investment banks including J.P. Morgan, Morgan Stanley, Goldman Sachs, and UBS have reached a consensus on the industry outlook. They predict that the current supercycle of the memory industry will continue at least through the end of 2027, and the structural supply shortage will persist into 2028.

In terms of market growth, the global memory industry is projected to experience significant growth in 2026. Although growth is expected to moderate in 2027, it will still significantly outpace the global semiconductor industry. Meanwhile, the ramp-up of new memory capacity is constrained by long lead times, as new memory wafer fabs typically take 3–5 years to reach mass production. Before new large-scale production lines come online in 2028, incremental



This image is generated with the assistance of AI

global memory chip supply will remain limited.

Furthermore, nearly all incremental capacity has been committed under long-term supply contracts to meet high-end, AI-driven demand, leaving little capacity to alleviate the persistent shortage of general-purpose memory chips used in communication devices and consumer electronics. The global HBM market is expected to face a persistent supply-demand imbalance from 2023 to 2028. This will continue to limit the scope for price corrections in traditional DRAM and NAND flash memory, driving the entire memory industry into a supercycle lasting more than three years.

Impacts on Home Terminals

Our analysis of TrendForce data indicates a sharp year-on-year increase in the prices of mainstream memory chips used in home terminals, including DDR3, DDR4, and eMMC, as of June 2026. The drastic rise in memory chip costs has significantly increased the overall manufacturing cost of home terminals. Cost pressures facing home terminals are not limited to memory chips. Prices of multiple key upstream electronic components have also surged. Core components, including PCBs, optical modules, optical fibers, and power supplies, have seen substantial price increases, placing unprecedented cost pressure on the entire industry.

Alongside the price surge, lead times for core components including PCBs and optical modules have increased significantly, posing greater challenges for raw material procurement and inventory preparation for downstream manufacturers.

Industry Responses

Facing a complex market environment characterized by elevated operating costs, longer lead times, and higher market uncertainty, telecom operators and terminal manufacturers must break down operational silos and coordinate responses across the industrial chain. ZTE, as a leading global telecom equipment supplier, has implemented comprehensive upgrades across its supply chain and product technologies to ensure end-to-end supply stability. For operators, greater emphasis can be placed on optimizing procurement and inventory management while refining operational strategies.

This surge in memory price is not a temporary market fluctuation, but a long-term structural change in the industry. Rising chip costs and extended lead times will become key challenges for the electronic information industry in the next few years. Only with in-depth collaboration among upstream, midstream, and downstream players across the industrial chain, and joint optimization of operational and product strategies, can the whole industry effectively alleviate continuous cost pressures, ensure stable operation, and support long-term sustainable development. ZTE TECHNOLOGIES



ZTE Helps AIS Build a Benchmark Video Platform in Thailand



Shan Changliang

Senior System Solution Expert, ZTE

When Thailand's largest mobile operator, Advanced Info Service (AIS), set out to rebuild its video platform, several challenges lay ahead: supporting millions of subscribers, ensuring carrier-grade stability, delivering a consistent experience across screens, and building an architecture that could evolve for many years. In collaboration with ZTE, AIS built a benchmark video platform in Southeast Asia.

A Video Platform Built for the Next Decade

For AIS, video is no longer a value-added service bundled with a mobile plan. It has become the anchor of its converged home and mobile entertainment strategy. The platform needs to bring live TV, on-demand content, catch-up TV, network PVR, and third-party OTT apps together.

However, the legacy model was showing its limitations. Traffic spikes caused service interruptions, new features took too long to launch, disaster recovery relied on manual switchover, and upfront capital expenditure was high. AIS needed a platform that could handle traffic surges reliably, scale on demand, and accelerate service launches from quarters to weeks.

ZTE's answer was a hybrid-cloud, microservices-based video platform deployed across AIS's private and public cloud environments, and unified under a single operations plane. Four capabilities set ZTE apart.

Hybrid Cloud Designed for Zero Interruption

The first differentiator was the architecture. ZTE designed the platform as a hybrid cloud spanning AIS's two private data centers and public cloud, with microservices running on Amazon EKS and the distributed data bus (DDB) and unified gateways (UGW+) shared across availability zones. The design principle was simple: no single point of failure should ever impact users.

The numbers tell the story. The platform targets 99.999% availability. Auto-scaling is fully automated, with virtual machines expanding in roughly five minutes, database capacity in three minutes, and containers in one minute—so sudden traffic spikes during live events can be absorbed

before users notice.

Disaster recovery is equally impressive, with a recovery time objective (RTO) of under 30 seconds and a recovery point objective (RPO) of under one second. These capabilities enable rapid, seamless failover, with subscribers experiencing no perceptible interruption. Compared with traditional models, this represents a major leap forward.

Hybrid cloud also transformed the economics. ZTE introduced a pay-as-you-grow (PAYG) model in which the private cloud handles baseline workloads, the public cloud accommodates traffic spikes, and AIS pays incrementally for the resources it uses. Elastic resource provisioning means that additional cloud resources can be requested within minutes. System components can be scaled and upgraded independently, allowing the team to roll out upgrades and expand capacity online without taking the service down. That translated directly into a lower total cost of ownership (TCO), faster time to market, and a higher level of reliability.

A Multi-Screen Experience that Feels Native Everywhere

A great video platform delivers a consistent experience wherever people watch. ZTE's second differentiator was its comprehensive, multi-screen client portfolio covering a wide range of devices commonly used in Thai households, including set-top boxes (STBs), Chromecast, iOS and Android phones, PCs, tablets, and smart TVs.

Each screen is designed around its own interaction model rather than a one-size-fits-all UI. On TV, the focus is on ultra-high-definition (UHD) viewing and intelligent interaction, with immersive video backdrops, floating rating cards, and waterfall-style layouts that put content first. On mobile, the design prioritizes smooth streaming and natural touch interaction, with highlight-focused layouts and one-tap social sharing. On PC, the interface emphasizes information density and keyboard-and-mouse efficiency, with column-based browsing and quick access to recordings. Across all three, ZTE's design language centers on three key words: Smooth, Specific, and Social.

The feature set is comprehensive. It includes live TV, VOD, time-shifted TV, and start-over. Picture-in-picture and multi-view let sports fans follow multiple matches, while bookmarks, favorites, and multi-user profiles personalize the experience for each household member. Built-in search and recommendations surface the right content.

Crucially, the platform natively integrates YouTube, Netflix, and third-party apps, and supports casting via Chromecast and AirPlay. Built-in social sharing features for Facebook, X (formerly Twitter), and LINE—a leading messaging app in Thailand—turns viewing into a shared activity. The result is that wherever AIS subscribers are and whatever device they use, the service feels built for that screen rather than ported to it.

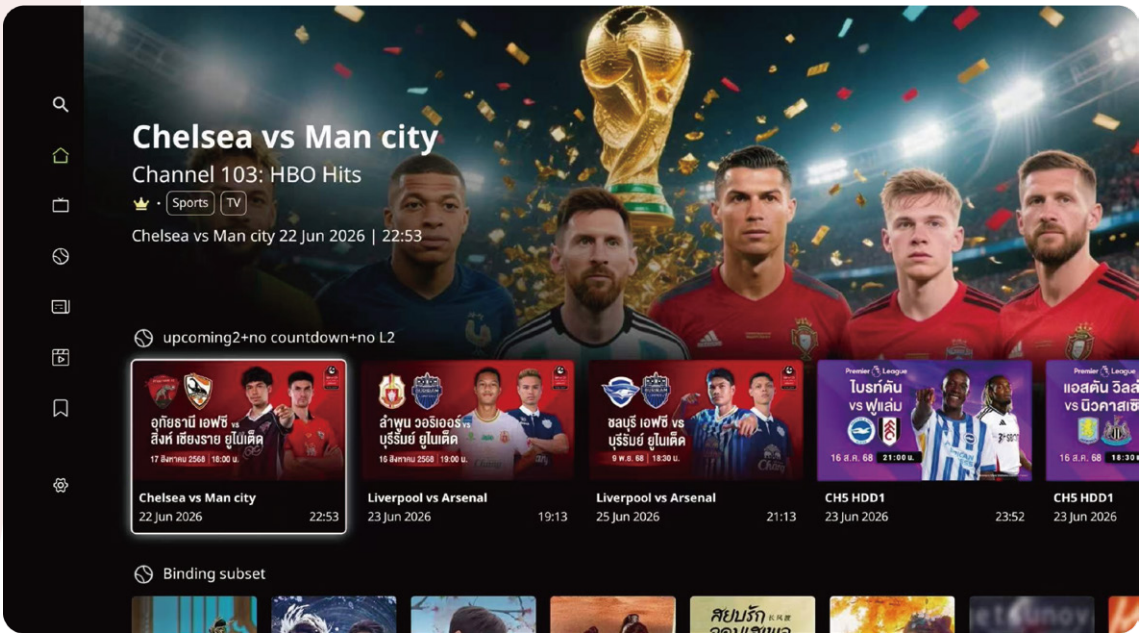
An Open, Standardized Platform that Aggregates Everything

Openness was another key strength of ZTE's platform. Modern video platforms depend on their ability to aggregate content, advertising, notifications, and payment services across dozens of external systems. ZTE built the platform around industry-standard interfaces, enabling rapid, customized integration without proprietary lock-in.

On the content side, the platform brings together leading global OTT services—including Netflix, YouTube, Disney+, and Prime Video—alongside AIS's own live and on-demand content libraries.

On the business side, it integrates with AIS's BSS stack, including super duper payment gateway (SDPG), billing, and direct carrier billing (DCB) to enable one-click subscriptions. Authentication ties into the AIS ID system, while analytics from MaxMind and ad serving through Google Ad Manager give AIS the tools for precise, data-driven operations. Push notifications are delivered through Apple Push Notification service (APNs) and Google Firebase Cloud Messaging (FCM).

Security and monetization are equally enterprise-grade. DRM and watermarking protect premium content, while server-side ad insertion (SSAI) delivers a broadcast-quality ad experience. The platform's modular architecture—comprising



CMS, BMS, Search, Recommendation, Ad, MES, Campaign, EZMON, CFMS, and monitoring—allows individual modules to be upgraded without affecting the overall service, while enabling innovative new services to be incubated and launched quickly. ZTE also integrated components from its partners across CDN, advertising, and IoT. This openness meant that the platform would not become a closed silo, but rather serve as an integration hub for the entire digital entertainment business.

A Roadmap to the Smart Home

Looking ahead, AIS aims to evolve its video platform, laying the foundation for its converged smart home vision. ZTE's roadmap provides a clear path.

The platform is designed to integrate home IoT services under a unified layer, with the TV and STB acting as the smart home hub. ZTE's roadmap includes an AI voice-enabled STB, bringing high-quality audio, voice assistance, and 4K video player together in one device. Control is multi-modal: voice, the mobile phone as a remote control, and a smart display that brings information and control into the living room.

Beyond connectivity, ZTE and AIS are co-innovating on revenue-driving services. Cloud gaming on TV turns the STB into a console. Online shopping with scan-to-order merges entertainment and commerce. Watch Party lets friends and family chat while watching live sports together—a feature tailor-made for Thailand's passionate football audience. On the AI front, the roadmap includes automated highlight clipping, AI image-quality enhancement, and AI dubbing, all of which are expected to reduce production costs and expand content reach.

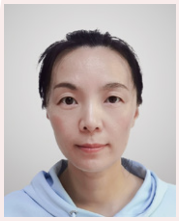
The collaboration extends beyond the video platform itself, enabling the service to grow from a video product into a one-stop smart home solution.

Conclusion

The project demonstrates what can be achieved when architecture, experience, openness, and a foward-looking roadmap come together. ZTE addressed AIS's key requirements—million-level capacity, stability, multi-screen consistency, and long-term evolution—with a single, coherent strategy. Hybrid cloud delivers reliability and cost efficiency; multi-screen clients provide a consistent user experience; open standard interfaces enable content and business aggregation; and the smart home roadmap lays the groundwork for the future. ZTE TECHNOLOGIES



Fujian Mobile and ZTE Collaborate on a Home Broadband Agent for FTTx Network O&M



Zhu Zhenghua

Chief Engineer for Fixed Network Product Planning, ZTE

As a leading provincial operator under China Mobile Group, China Mobile Fujian Branch (Fujian Mobile) is committed to advancing the Digital Fujian strategy by upgrading its gigabit optical networks. Rapid business expansion, increasingly diverse home service scenarios, and rising user expectations are exposing the growing limitations of the traditional operating and maintenance (O&M) model.

- The diversity of home terminals, network configurations, and value-added services has significantly increased the complexity of network operations.
- Users' expectations for network quality and service responsiveness continue to rise, while customer complaint volumes remain persistently high.
- Troubleshooting involves multiple steps and is time-consuming, making it difficult to meet users' expectations for shorter mean time to repair (MTTR).
- The lack of precise, end-to-end fault location methods leads to low efficiency in root cause identification.
- Most faults require on-site maintenance, increasing operating costs and negatively affecting users' perception of service quality.

To address these challenges, Fujian Mobile needs to build an intelligent and proactive O&M system to quickly identify, accurately pinpoint, and efficiently resolve network quality issues. It also needs to establish a comprehensive mechanism covering complaint response, fault location, rapid repair, and closed-loop review to ensure timely responses and efficient issue resolution.

Home Broadband Agent Overview

Fujian Mobile, together with ZTE, has developed a proactive home broadband quality management system that incorporates a home broadband agent. The agent is an intelligent decision-making and automated processing system designed for home broadband complaint and service optimization scenariosp. It leverages big data, structured algorithms, and large language models (LLMs), supported by AI OLT smart boards and network management systems. Unlike conventional O&M models that rely on manual inspections or rule

engines, it enables a shift from passively responding to complaints to proactively preventing them by providing 24-hour advance warnings of potential complaints, significantly improving the user experience.

The agent is built on a fine-tuned version of ZTE's Nebula Telecom Large Model and incorporates a dedicated knowledge base for home broadband complaint scenarios, integrating tens of millions of home broadband complaint cases and network fault data. It supports advanced semantic understanding, intent recognition, and root cause reasoning. Unlike general-purpose LLMs, it can accurately interpret vague user complaints, simulate network experts' diagnostic reasoning, and rapidly localize the root causes of network faults.

The agent improves question-answering (Q&A) accuracy in all-optical network O&M and also features a natural language-driven intelligent orchestrator. Once workflows from various O&M scenarios, including analysis, diagnosis and optimization, are fed into the system, the agent can replicate expert knowledge, significantly reducing the time required to generate customized reports. In the future, the agent will be expanded to incorporate multiple modules, as illustrated in Fig. 1.

Solution Highlights

Leveraging ZTE's technological strengths in big data, LLMs, and communication networks, the agent addresses key limitations of traditional complaint handling. Through intelligent complaint handling, precise fault location, and proactive service, it is ushering home broadband services into a new era of AI empowerment.

- **Deep Customization of LLMs for the PON Domain**

Based on open-source models, ZTE developed a dedicated PON-domain LLM by incorporating an 88 GB corpus of the original PON domain data and extracting a 20 GB high-value dataset. As a result, Q&A accuracy for PON domain O&M increased from 65% with general LLMs to 85% with the domain-specific model.

- **Intent-Driven O&M**

An architecture combining an intent interface and an AI agent has been created based on natural language processing, integrating Text-to-SQL, Text-to-API, and knowledge graph technologies, revolutionizing the traditional O&M model that relies on programming or complex operations. O&M personnel can now define diagnostic workflows and

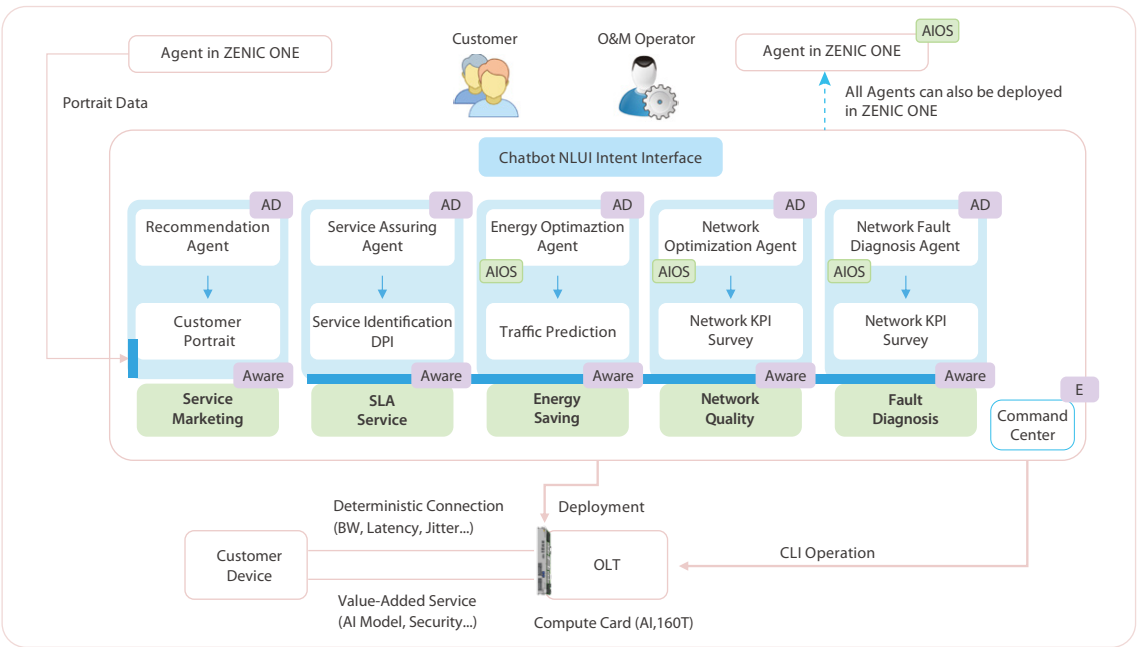


Fig. 1 ZTE's vision for a future home broadband agent.

In the future, as this solution is more widely adopted, home broadband networks will shift from human-driven, passive operations to AI-driven, proactive self-governance.

customize reports solely through natural language, without requiring coding skills.

- **Proactive Prediction and Optimization**

Different from traditional solutions that focus on fault recovery, this solution enables full-link proactive O&M through AI. It identifies instantaneous traffic spikes through machine learning-based time-series analysis and uses an LSTM model to predict 10G-PON bandwidth requirements, proactively avoiding congestion and capacity shortages. Furthermore, the agent monitors users and content sources with poor quality around the clock and automatically corrects soft faults such as Wi-Fi configuration errors. This shifts O&M from post-complaint handling to pre-complaint intervention, transforming the traditional O&M model.

Proactive O&M Practice in Fujian Mobile

Since 2024, Fujian Mobile has deployed over 150 smart OLT boards in nine cities in Fujian Province, including Quanzhou, Longyan, Fuzhou, Zhangzhou, Xiamen, Nanping, Putian, Ningde, and Sanming, covering nearly one million households and helping improve user satisfaction with its broadband service. In 2025, data collected by these smart boards was integrated into the home broadband agent for analyzing users experiencing poor service quality, as well as those who had filed complaints. Currently, the home broadband agent has been deployed within Fujian Mobile's existing network, delivering significant improvements in the following areas:

- **Improved complaint-handling efficiency:** The intelligent agent replicates expert experience to generate customized O&M reports, reducing report-generation time from one month to one minute. The number of service tickets has dropped by 20%. The average complaint processing time has been reduced from 25 minutes to five minutes, while both the overall complaint resolution time and MTTR have been reduced by 30%.
- **Improved network root cause identification:** In PON networks, the accuracy of root cause identification reaches 85%, significantly improving fault-handling efficiency. The agent shifts O&M from passive troubleshooting to proactive early warning and optimization, enabling network quality issues to be addressed in advance.
- **Reduced repetitive tasks and O&M costs:** O&M labor costs have been reduced by over 40% by minimizing repetitive tasks such as manual triage, work order dispatch, and reviews. By preventing duplicate dispatches and ineffective on-site visits, the solution further reduces costs.

In the future, as this solution is more widely adopted, home broadband networks will shift from human-driven, passive operations to AI-driven, proactive self-governance. As collaboration among 50G-PON, 10-gigabit optical networks, FTTR all-optical networking, and edge computing deepens, intelligent OLT boards and LLMs will continue to evolve, enabling network self-optimization, fault self-healing, and service self-response. These advances will help the industry build a new smart home broadband ecosystem with the goal of zero on-site visits, zero complaints, and zero waiting time. ZTE TECHNOLOGIES

ZTE

To lead in connectivity and intelligent computing, enabling communication and trust everywhere