



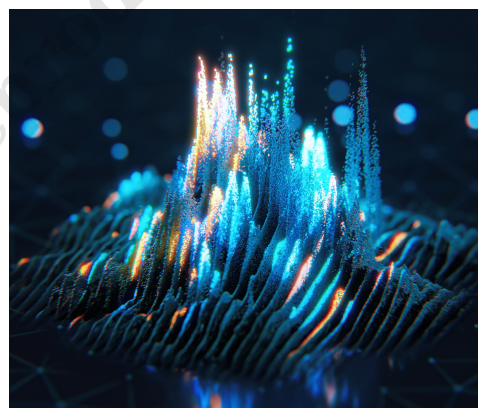
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AI Starts with Fiber

By: [Geert Heyninx](#)

The next wave of broadband



Broadband has historically evolved through distinct phases, each shaped by changing usage patterns. In the broadcast era, the focus was on coverage to connect as many users as possible. In the on-demand era, speed became essential, driven by streaming and social media. Finally, in the creator era, upstream capacity gained importance as users began producing and sharing traffic flows.

Now we enter the AI era, where the network requirements change again. The network is no longer only serving people – it is serving machines, models, and autonomous systems. Traffic patterns are changing. Demand is no longer solely human-driven. And “best effort” connectivity is no longer good enough.

As AI evolves, it will require deterministic network performance. A delayed video stream is annoying, but a delayed robotic control signal can stop production or create safety risks. High-capacity, low-latency, and reliable broadband will be key to enabling the next generation of AI services.

AI is redefining behaviour and traffic

AI is often framed as a productivity tool, but that is an understatement. We are already seeing the rise of AI-driven applications across many different industries. Surveillance, for one, is no longer passive recording. It is real-time analysis at scale. Every camera becomes a data firehose, pushing massive video streams to the cloud for instant AI processing to detect unusual behavior or objects, identify suspects, and alert authorities instantly. Multiplying this across cities, airports, and other venues results in continuous high-volume upstream traffic to the cloud.

AI and open cloud platforms are also reshaping how people work by taking over repetitive, time-consuming tasks and augmenting everyday decision-making. Routine activities, like summarizing documents, generating reports, writing code, or organizing data, are increasingly handled by AI, allowing people to focus on higher-value, creative, and strategic work. Homeworkers and students will benefit from faster research, analyses, and writing. As AI becomes fully entrenched in our daily (work) life, seamless access to cloud-based AI services is vital. From a broadband perspective, this means not only higher network loads driven by growing volumes of AI interactions, but also a greater need for reliability. As more workflows depend on AI, broadband connectivity must evolve to deliver consistent, always-on access to cloud-based AI services.

Autonomous driving requires new, hyper-accurate maps including precise lane positioning, road curvature, gradients, lane markings, boundaries, recent bumps on the road, and pedestrian crossings – all of which are far beyond what human-oriented navigation apps provide. These data are collected by vehicles every time they are on the road. The real bottleneck? Uploading this data daily from homes back to car manufacturers, so they can continuously build and update maps, ensuring safer and more efficient routes for everyday travel. Upstream is no longer secondary; it is vital in activating and accelerating the self-learning algorithms needed for fully autonomous cars.

Looking ahead, the next wave of AI adopters will not be humans, but machines. Dozens of edge and home devices will increasingly rely on local AI workflows. As AI evolves rapidly, these devices, not people, will continuously download data to keep their capabilities up to date. They will act autonomously, without the need for human prompting.

The trend continues with AI models that go beyond text to images and video, further increasing data exchange requirements. Ultimately, the next phase of AI development will rely less on existing internet data and more on real-world inputs. The physical world itself will become the primary source of training data. Today, most AI traffic is generated by humans interacting with applications such as ChatGPT, copilots, or search assistants. In the future, billions of devices – including robots, smart appliances, vehicles, cameras, industrial equipment, wearables, and home assistants – will continuously interact with the real world through sensors, cameras, lidar, digital twins, and more, generating far more real-time traffic than traditional applications.

Networks for AI: The new non-negotiables

AI-powered applications demand connectivity that goes far beyond traditional requirements. “Best effort” is obsolete. For AI-driven services, predictability is as critical as speed. Deterministic networks guarantee consistent latency, reserved bandwidth, and rock-solid reliability, allowing real-time and mission-critical applications to function without disruption.

1. High Bandwidth

The myth that broadband is downstream-heavy is over. AI flips the model where developers download massive models, users upload data for processing, and devices exchange data continuously. A fiber endpoint is not a single user but multiple agents running in parallel and competing for network resources.

AI is quietly turning every user, device, and system into a data generator requiring multi-gigabit speeds on broadband networks.

Fiber broadband networks are essential to address these bandwidth needs. With 25G PON and 50G PON technologies, they can evolve in a very efficient way, leveraging the existing network assets.

2. Ultra-Low Latency

AI operates in real time, or it fails. Whether it's robotics, cloud decision-making, or immersive applications, milliseconds matter, and even small delays can degrade performance or user experience. Fiber's inherent low latency, latency tails, and variations make instant AI possible.

3. Security

AI amplifies both value and risk. AI applications often involve sensitive data, including personal information and enterprise insights. Networks must be secure by design, not as an afterthought.

Next-generation PON technologies come with advanced security mechanisms, protecting data both in transit and at endpoints, and AI-driven monitoring for anomaly detection and threat prevention.

4. Always-On Reliability

AI does not tolerate downtime. There is no "retry later" for autonomous systems, remote operations, or real-time analytics. Networks must be resilient, self-healing, and effectively invisible. Fiber's physical reliability, combined with intelligent monitoring and self-healing capabilities, ensures networks can meet the demands of AI workloads 24/7.

New revenue opportunities

AI services are no longer emerging. They are widely deployed, heavily funded, and relentlessly scaling. Nearly 80% of enterprises actively use AI to run their business, while over 30% of people across OECD countries use AI daily. When OpenClaw, the open-source AI agent, hit the market, it got tens of millions of installations in a record time frame.

AI has shifted from experimentation to production at scale, and in doing so, is redefining the very foundation of digital services.

For broadband providers, this is an important moment, an opportunity to shape the AI economy. This is not just about connectivity anymore; it's about owning a critical position in the AI ecosystem, influencing the future of user experience, and ultimately securing their own future.

Because without high-capacity fiber broadband networks, AI's potential collapses into trivial use cases. No immersive applications, no real-time intelligence, no edge innovation- just basic tasks like text editing.

Operators with fiber broadband networks that deliver multi-gigabit speeds, ultra-low latency, and differentiated quality of service will not just support AI; they will monetize it.

Fiber is not a nice add-on. It is the foundation of an AI economy.