

Spotlight on...

The Virtualised Network

A Solution for High-Speed Broadband Service Delivery Over Both Fibre and DOCSIS Networks



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Two years after the pandemic, things have settled and in many industries, they're booming again. What about ISPs?

There is always fierce competition within the ISP segment, and we are now seeing added pressure from contenders using wireless, cellular and satellite technologies. Providers are being pushed into defining new strategies to help their businesses add subscribers. In the new paradigm of internet options, service differentiation is paramount and operators need to think beyond billboard speeds.

Not just the service providers that are feeling the pinch; consumers are selective these days.

Yes, consumers have a wider range of choices for their internet, so they are being discerning with their spending. We believe customers' decisions are influenced by a user's quality of experience.

Like any other utility, broadband is broadband. Not a lot to differentiate providers is there?

Competitive pricing is "table stakes" with the availability of in-home data solutions from the household's cellular providers. Broadband providers can gain an edge by shifting the focus towards an always-on service, 99.999% availability, wall-to-wall Wi-Fi coverage and low latency. Consumers favour ease of use so interactions through straightforward self-service tools and friendly representatives. From there, look at factors like community involvement, corporate social responsibility and ecological impact.

As technology develops, all of the above improves. How is this choice made by the ISP?

With an increasing number of technologies and architectures to choose from, questions arise on which path is best suited to efficiently, economically and sustainably deliver the reliable, high-speed connectivity our communities, schools, businesses and governments demand.

It's not as simple as it used to be!

Quite. We have operators asking about 10G, 50G, and 100G fibre to the home, DOCSIS 3.1, DOCSIS 4.0 and wireless. Each technology has its use cases, so we expect to see them co-exist within a single provider's footprint.

Seems like today, operators have the freedom to leverage alternative options.

While hardware is still required for the physical layer, a cloud-native virtualised core platform can connect to a variety of edge hardware devices in the network to deliver multigigabit services to any location with greater ease and efficiency.

The cOS core simultaneously supports XGS-PON, ComboPON, GPON and 10G EPON, along with multiple flavours of DOCSIS 3.1 & 4.0 so providers don't need to draw hard lines or create operational silos for each solution.

Now that does sound like progress....



It's no longer a question of which technology to choose. Use them all. We now have the solution to enable operators to simultaneously deploy all of the technologies through a unified, shared core infrastructure.

Sounds expensive. Is it?

No, our distributed access architecture provides operators a significantly lower total cost of ownership than traditional solutions. The virtualised core gets the benefit of the latest off-the-shelf servers and processors, benefiting from Moore's Law to capture capacity and cost advantages over traditional products. The net result is a reduction in the upfront investment and, thanks to our advanced cloud monitoring solution, lower ongoing operational costs as well.

Operators can select optimal broadband technology on a location-by-location basis for a more precise approach to service delivery.

What do you mean by 'location-by-location'?

It could mean by county, by town or by street. We uniquely enable operators to be granular as building-by-building or home-by-home. All the Harmonic nodes deployed can simultaneously serve both 10G FTTx and DOCSIS. This means operators can leverage existing wiring where available

and direct investment for new infrastructure towards the specific network segments where constraints exist.

Think about a family that has coax in their home and is happy with a 2G or 5G internet service it provides. Leave that in place, no reason to hassle the customer.

If the home next-door is asking for 10G symmetric speeds or downloads TB upon TB every month, put that superuser on FTTx. Added bonus that this frees up DOCSIS bandwidth for the existing DOCSIS customers in the area. It keeps both the top-tier customer and the family next door happy.

Next door! With all that going on in the background making that happen? Impressive.

This is the power of software. We virtualised critical functions of control, management and traffic handling across multiple types of hardware to deliver a seamless experience for the operator. It is a single system and one pane of glass even with multiple types of edge hardware or network connectivity.

Advanced streaming telemetry and performance analytics are in place to identify areas in need of maintenance along with providing automation for remote management, updates and deployments.

We are proud to say this has proven this at scale too. The cOS platform is powering over 23 million homes worldwide today.

That's a huge footprint. What does that look like in terms of space and power consumption?

For almost a decade, continuous improvements to the cOS platform performance have resulted in a remarkable 75% reduction in power consumption for Harmonic customers, minimising OPEX and reducing the overall carbon footprint of broadband infrastructure. The platform enables up to 70% power savings and 95% space savings. We have scenarios where 28 racks of equipment are replaced by a single rack of our gear.

Sustainability is almost an Olympic sport these days. Lot of greenwashing.

Massive sustainability gains have been touted again and again by tier-1 operators around the world. Vodafone and Comcast published papers about the benefits of virtualised core software. When the cOS virtualised core is combined with OLT edge devices, it enables operators to leverage smaller footprints including outdoor cabinets and node enclosures to quickly and efficiently deploy 10G fibre services. Operators can serve more homes from their existing headends, points of presence and better leverage their existing infrastructure.

We are all for leveraging existing infrastructure. What else?

We believe in an Open ONU strategy that enables the operator to utilise third-party, in-home devices is critical. It ensures the operator can select the best in home equipment available. Sometimes that means the newest, high performance Wi-Fi gateway or mesh device.

In other cases, we see operators leverage this flexibility to negotiate lower rates on consumer premise equipment, which is one of the biggest cost centres for a broadband provider. Lastly, an Open ONU approach simplifies upgrades in existing brownfield FTTx areas. We help the operator deploy upgraded core network capable of serving faster, more reliable connectivity without requiring the operator to proactively replace working legacy ONU's.

It certainly seems a very versatile solution.

Our Pier OLT shelf, for example, provides broadband operators with an evolutionary pathway from GPON to XGS-PON. Enabling a diverse array of deployment scenarios, Pier allows operators to meet a wide spectrum of subscriber and market needs more efficiently.

Such as?

Whether transforming legacy coax networks to unleash ultra-fast 10G broadband speeds or establishing cutting-edge fibre networks in greenfield environments, the Pier OLT shelf provides agility and opportunity for operators. Higher density and long-range optics enable service providers to build their network more efficiently. Think about taking a map with a highlighter. Draw a circle around every Pier that has a 120km diameter. That is your service area. Operators can place the Pier in a discreet outdoor cabinet, hundreds or even thousands of kilometres from the nearest data centre. You will quickly realise it is possible to serve massive geographical areas without the overhead of constructing or renting buildings in every community.

There don't seem to be any downsides here. What am I missing?

Designing and deploying a large-scale network takes time. Our platform shortens and simplifies that process significantly, but we still have a lot to get done. Operators need to be investing now and establishing the technical foundations they will use to compete for new subscribers over the coming decades. We believe we have the best answer in the industry and want to help kick off these projects before competition and subscriber churn negatively impact broadband providers.

Last word. cOS in a nutshell?

The cOS platform enables broadband providers to offer faster, more reliable, cost-compelling internet services to existing subscribers and for new markets.



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