

EXECUTIVE BRIEF

A FRAMEWORK FOR
ACCESS NETWORK EVOLUTION:
The Path for a Successful Transition
to all-IP Delivery



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Consumers today have a constantly growing appetite for video. They're watching more of it, on a growing number of devices, at an increasingly higher quality. While Internet use has grown at an astounding rate over the last few decades, this video explosion is causing the rate of bandwidth consumption to accelerate faster than ever before. Internet services are forecast to grow at a 40% compound annual growth rate (CAGR) for the next 10 years. At this pace, subscribers will consume the entire capacity of today's Service Provider HFC networks within a few short years.

Service Providers will need to increase the bandwidth within their infrastructures to support today's applications and services while staying ahead of consumer demand. But first, it's important to conduct a careful network planning exercise that factors in the expected bandwidth demand for the next 10 years. This allows Service Providers not only to stay ahead of demand, but to do it with an evolutionary approach that makes the most of their existing investments.

To get the most of this process, it's usually best for Service Providers to treat their access architecture, video services and data services as interdependent, which helps simplify their infrastructure planning efforts. For many Service Providers, this process also results in a shift in thinking away from multiple distinct networks and towards a common delivery solution for all of their services - IP.

By standardizing on IP, not only can Service Providers simplify their networks, they can also take advantage of the lower costs offered by web-based video services and content delivery networks (CDNs) as part of their video distribution strategy. The transition to IP also creates a launch point for advanced features like targeted advertising, blackout insertion and encryption/digital rights management (DRM). These advanced services are expected to form the backbone for new revenue streams and a better competitive position in the market.

But planning a large scale migration of QAM-based distribution to an all-IP world can be overwhelming. That's where an experienced professional services partner that uses a time-tested framework can really help, with a sound plan at its core.

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Planning for transition and growth

Once they commit to delivering all of their services over IP, Service Providers will want to quickly create a plan for their legacy set-tops. By migrating elements of their QAM video distribution infrastructure in the inside plant to a virtualized data-center approach, Service Providers can evolve the network in a way that ensures a high quality of experience for users during the transformation, while leveraging their existing CPE investments. From there, they can begin making a comprehensive plan to evolve their access networks and grow capacity.

For Service Providers, the first step in the journey to an all IP environment is to plan for growth. A professional services partner can guide Service Providers as they consider key operational elements, such as:

- Head-end space/power: Supporting an increase in service groups, as the number of households per service group declines, within current space and power constraints
- Fiber utilization and improved management: Moving to digital optics to support more wavelengths on a fiber and to simplify operational maintenance
- End-of-line signal quality: Improving plant robustness and bandwidth capacity through better spectral density, using node-based RF generation
- Facility consolidation/FTTx alignment: Reducing the number of headends with longer fiber runs with digital optics. Planning for both DOCSIS® growth and FTTx plant migration

Once the operational elements are evaluated, the next step is for Service Providers to forecast their access network capacity on an extremely granular level, such as by service group and/or busy hour usage. To make accurate predictions, Service Providers need visibility into combined video and Internet data services that are delivered across their network. This type of intelligence can be derived by working with a professional services team that combines expert consulting with a comprehensive analytical process for bandwidth planning and modelling to optimize network capacity. The analysis should cover actual utilization data, network system performance characteristics and new service and traffic usage projections.

ARRIS realized that Big Data plays a key role in analyzing actual utilization, network system performance characteristics and new service and traffic usage projections. These analytics are then incorporated into a traffic engineering formula that helps guide network evolution decisions. The broader view of bandwidth utilization helps Service Providers engineer their networks to deliver an optimal quality of experience for

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subscribers. The formula also assists Service Providers in making informed decisions in order to minimize OPEX and CAPEX costs over time.

By having visibility into existing network capacity and growth potential, Service Providers can develop a network evolution strategy that enables them to deploy new technology in stages. This flexibility allows them to balance the challenge of meeting subscriber demand while maximizing ROI and resources. While Service Providers can make investments today that will yield valuable returns for decades to come, knowing which new technologies and solutions are right for them is not always abundantly clear.

Expert services for success

Working side-by-side with a Service Provider's trained resources, our team can help expedite an evolution while minimizing any disruptions on business and operations. We offer installation, commissioning and test integration services, including staff augmentation services to help get the job done right. By providing specific architectural and equipment recommendations to optimize network capacity, ARRIS helps Service Providers make more-informed decisions based on the implications of different approaches to network evolution. Aside from guiding Service Providers on new technology investments, the ARRIS Professional Services team ensures a streamlined transition by devising the logistics of new equipment acquisitions, evaluating the impact of changes to existing facilities and accommodating the demands on resources.

With a smart evolution plan that maximizes current operational systems, Service Providers can begin their successful transformation to a new all-IP delivery infrastructure. We're with our Service Provider customers at every stage of their network evolution so they can keep pace with consumer demand as new applications and services emerge, and remain focused on delivering the highest quality of experience to their subscribers.

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