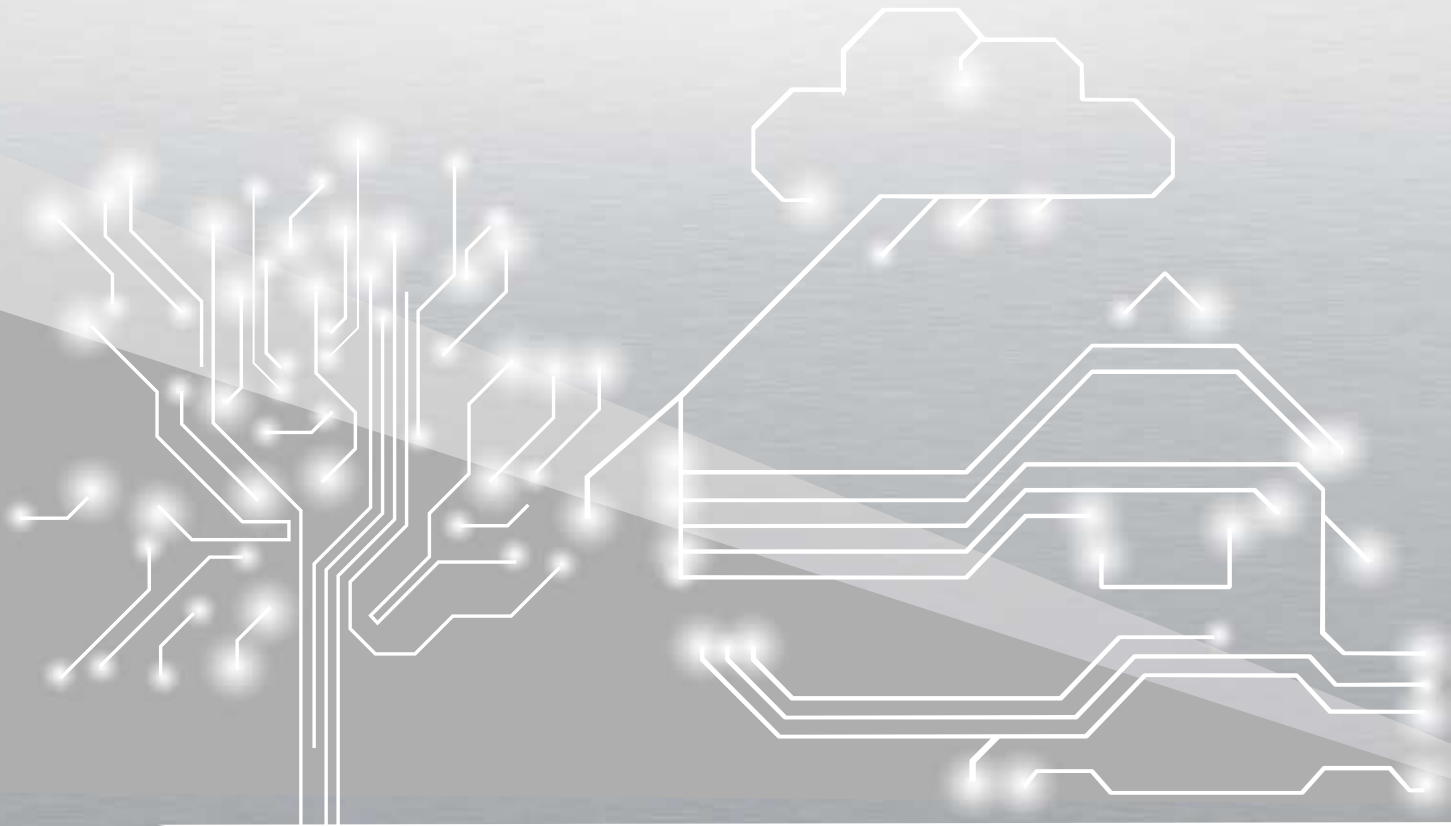# ADDRESSING CAPACITY AND PERFORMANCE CHALLENGES WITH FIBER DEEP ARCHITECTURE AND THE ARRIS POD METHODOLOGY

Problem. Solved.

ARRIS

Addressing Capacity and Performance Challenges with Fiber Deep Architecture and the ARRIS POD Methodology

Problem. **Solved.**

As consumers demand more and more bandwidth to download and share content from a spiraling number of devices, broadband Service Providers are working hard to keep up. But, keeping up can be a challenge with aging technology, full-to-overflowing headends and limited system capacity making quick solutions to pressing consumer issues difficult. This scenario puts customer satisfaction at risk and potentially weakens a provider's competitive position in the market. To compound matters, many Service Providers are experiencing a space crunch as they add racks or split nodes to expand service, forcing them to build or acquire expensive floor space to keep pace.

As such, Service Providers are finding that they need to add capacity in a cost-efficient manner— all while maintaining the highest quality of service during the expansion. Solutions to make these needed upgrades in a timely manner are needed to ensure their commercial and residential customers remain satisfied and to keep competitive threats at bay.

The Problem: Diminished capacity and poor quality

The profound problem is that Service Providers are struggling to meet the increased demand for high speed data from their subscribers, who are calling for better, faster and seamless service for all of their connected devices. It's become increasingly difficult for Service Providers to deliver the desired bandwidth, improve network quality, expand their networks efficiently and address subscribers' issues when they arise. Most are dealing with hubs that are already full, making node splits challenging and limiting their options for physical expansion. In addition, providers must update their systems and performance without impacting service delivery. Simply put, it is difficult to complete the quantity of node splits required to provide the best possible customer experience.

The Cause: Outdated equipment

Many service providers are still operating with equipment that was built in the early 2000s. These aging nodes, amps and optoelectronics were constructed well before the intense bandwidth needs of today's consumers—who have an average of seven devices per household. They regularly

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BEFORE / AFTER

Before Fiber Deep

- **84** parent nodes
- **883** homes passed per node
- **5-42** MHz return; **750/870** MHz forward

After Fiber Deep

- **1447** child nodes
- **51** homes passed per node
- **5-85** MHz return; **1.2** GHz forward

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BLOG
www.arriseverywhere.com

engage in activities such as streaming video and online gaming, and expect the system to operate without disruption.

For one of the nation's largest broadband providers, this outdated equipment meant they operated less efficiently and had limited options to improve performance for their services. A high number of subscribers per node meant that they were experiencing slow surf times and poor voice quality over their network. The node capacity issue was so problematic that the broadband provider was not able to resolve certain subscriber issues. Because today's consumers expect fast, effective service and quick resolution when problems arise, each of these incidents fueled dissatisfaction and put the broadband provider at risk for customer churn.

The ARRIS Solution: Node+0 implementation with POD methodology

ARRIS worked closely with its broadband provider customer to design and implement an updated hub—with new equipment at the headend that is denser, consumes less power and outputs less heat. Using a Fiber Deep architecture (also referred to as "node+0") was the answer to improving service per node and overcoming service delivery challenges.

This architecture provides the fiber density required for today's high speed service, as well as a migration path for future technology. Because it's done closer to the edge, it increases bandwidth per user, improves quality and makes maintenance and service easier. In this implementation, the Fiber Deep architecture enabled the provider to accomodate up to 128 homes passed per node service group, with the ability to further split the node and continue to enhance service quality in the future. The efficiency gains addressed the capacity challenges and helped the broadband provider meet its subscribers' current and expanding needs.
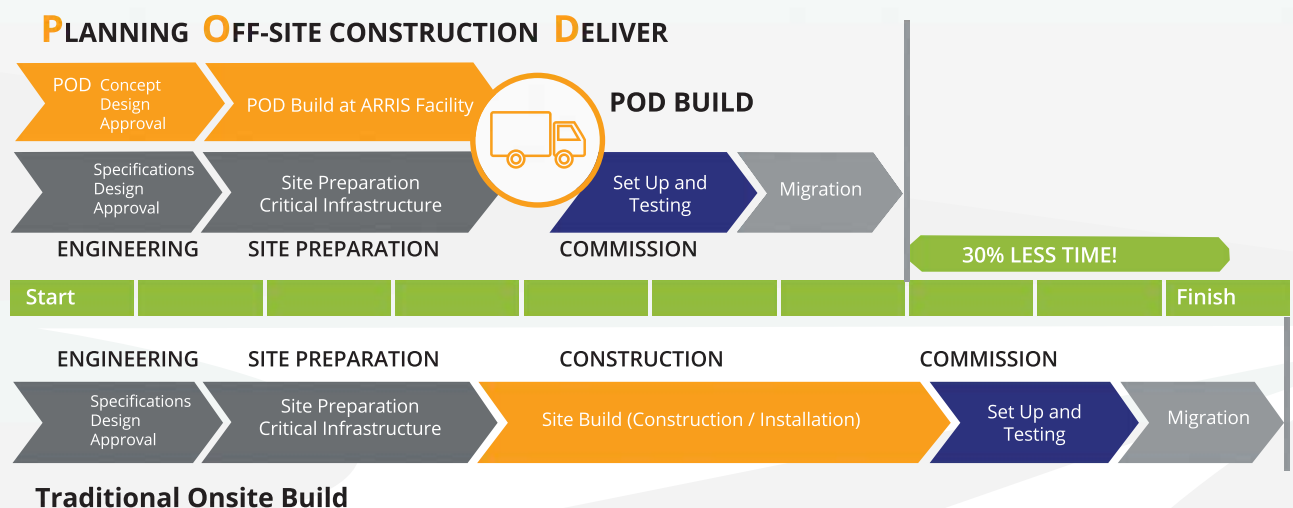
The ARRIS **POD** Methodology

PLANNING & DESIGN

OFFSITE BUILD

DELIVERY & INSTALLATION

ROOM TO GROW
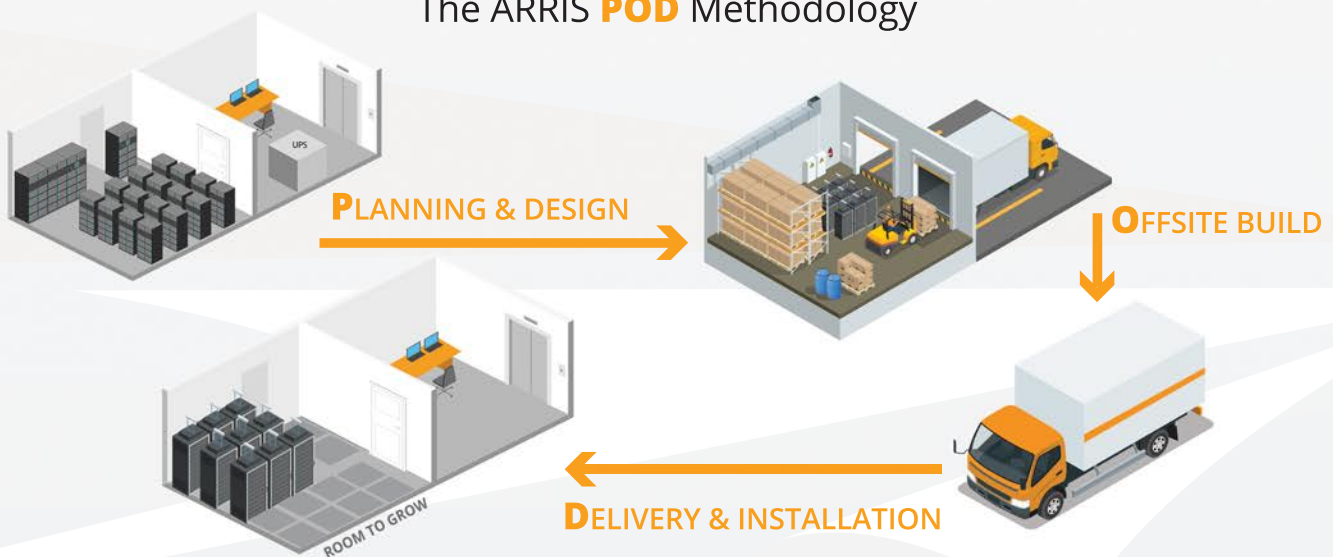
The decision to use ARRIS POD with the Fiber Deep architecture was driven by the broadband provider's goal to deploy an upgraded solution as fast as possible with minimal disruption to its subscribers. The methodology—Planning and design, Offsite build-out, Delivery and on-site integration (POD)—is a standardized solution in which ARRIS builds the physical system in a central facility with the capacity to build up to 1,500 racks. By using a dedicated facility in a central location with an efficient process to build the systems, the ARRIS services team was able to take advantage of economies of scale and produce multiple racks at a lower cost than if it were an on-site build. The team then delivered the assembled equipment and implemented it on site, drastically reducing the time to implementation. Because the unique POD methodology enabled an efficient transfer of service from the old system, the broadband provider was able to make this upgrade quickly and efficiently, with limited impact on ongoing operations.

While POD is standardized, it does not mean that every Service Provider gets the same solution. The team at ARRIS works closely with each of its customers to design the best, most efficient solution - delivered fast. Then they use this methodology to design and build racks with better quality and consistency, at a lower cost than on-site builds. Because it's a tested and proven process, it enables faster implementation of the updated headend, meaning reduced costs and faster time to market for Service Providers. This approach also enables ARRIS to deliver the same level of quality across implementations, providing consistency and serviceability from site to site.

The POD methodology creates an easy migration path for Service Providers that are preparing for next generation hardware—including distributed access architectures (DAA) like remote-PHY. ARRIS works closely with Service Providers to deliver the guidance and equipment they need in a vendor agnostic fashion - efficiently, cost-effectively and without impacting subscribers.

PLANNING **O**FF-SITE CONSTRUCTION **D**ELIVER

POD Concept Design Approval

POD Build at ARRIS Facility

POD BUILD

Specifications Design Approval

Site Preparation Critical Infrastructure

Set Up and Testing

Migration

ENGINEERING   SITE PREPARATION   COMMISSION

30% LESS TIME!

Start   Finish

ENGINEERING   SITE PREPARATION   CONSTRUCTION   COMMISSION

Specifications Design Approval

Site Preparation Critical Infrastructure

Site Build (Construction / Installation)

Set Up and Testing

Migration

Traditional Onsite Build

The Result: Increased bandwidth and better quality

Core to the strategy of the POD methodology, is building the racks and shipping them ready to install when they arrive on site. For this broadband provider, each 4 and 5-rack system build took only five weeks from start to finish. If the equipment were to be built onsite with local contractors, the implementation would typically take much longer. Overall, the POD methodology offers a shorter time to implementation for a Fiber Deep project with minimal service disruptions.

In addition to a faster implementation, the architecture deployed with the POD methodology is a more efficient use of space. In this real-life scenario, the broadband provider went from 84 nodes supported to 1,447 – using the same headend space and freeing up additional hub space for fiber pass through to better serve its customers, including a major Metro Ethernet business customer. As a standard practice, ARRIS provides its customers with detailed documentation on the build, allowing the broadband provider to easily maintain or expand the network in the future.

With the node+0 architecture and ARRIS POD methodology, the broadband provider is using the latest generation of hardware designed to deliver maximum bandwidth in a cost-saving, denser and smaller footprint. By deploying the POD methodology with a Fiber Deep architecture, the broadband provider was able to increase capacity and improve network quality and throughput to all subscribers. Because of the increased bandwidth, they were able to add additional QAMs to increase upstream and downstream capacity. This means less congestion on the network and a better experience for the consumers, putting the broadband provider in a stronger position to improve service, sell future services and gain a competitive edge.

Problem. Solved.

Contact your account manager to explore how the ARRIS Professional Services team can help you expand capacity, improve network performance and get your network ready for the future of broadband.