

CORNING

Network Architectures for Community Broadband
Connect to a World of Possibilities

CONTACT US



1841 Industrial Ave
San Angelo, TX 76904
(325) 262-4031

www.unitedtelsupply.com



and

CORNING





Make a Real Difference for Your Community

Reliable, cost-effective, high-speed broadband can bring economic growth and a higher quality of life to your friends and neighbors. The first step? Choosing the architecture type that's right for you. We've got the expert advice to help you find the right balance to meet your community's needs today and for decades to come.

We're on a mission to Bring Fiber to the People

Keeping people connected is at the heart of what we do. Delivering broadband everywhere will require a collaborative effort. Let us help you find the best approach for your network.

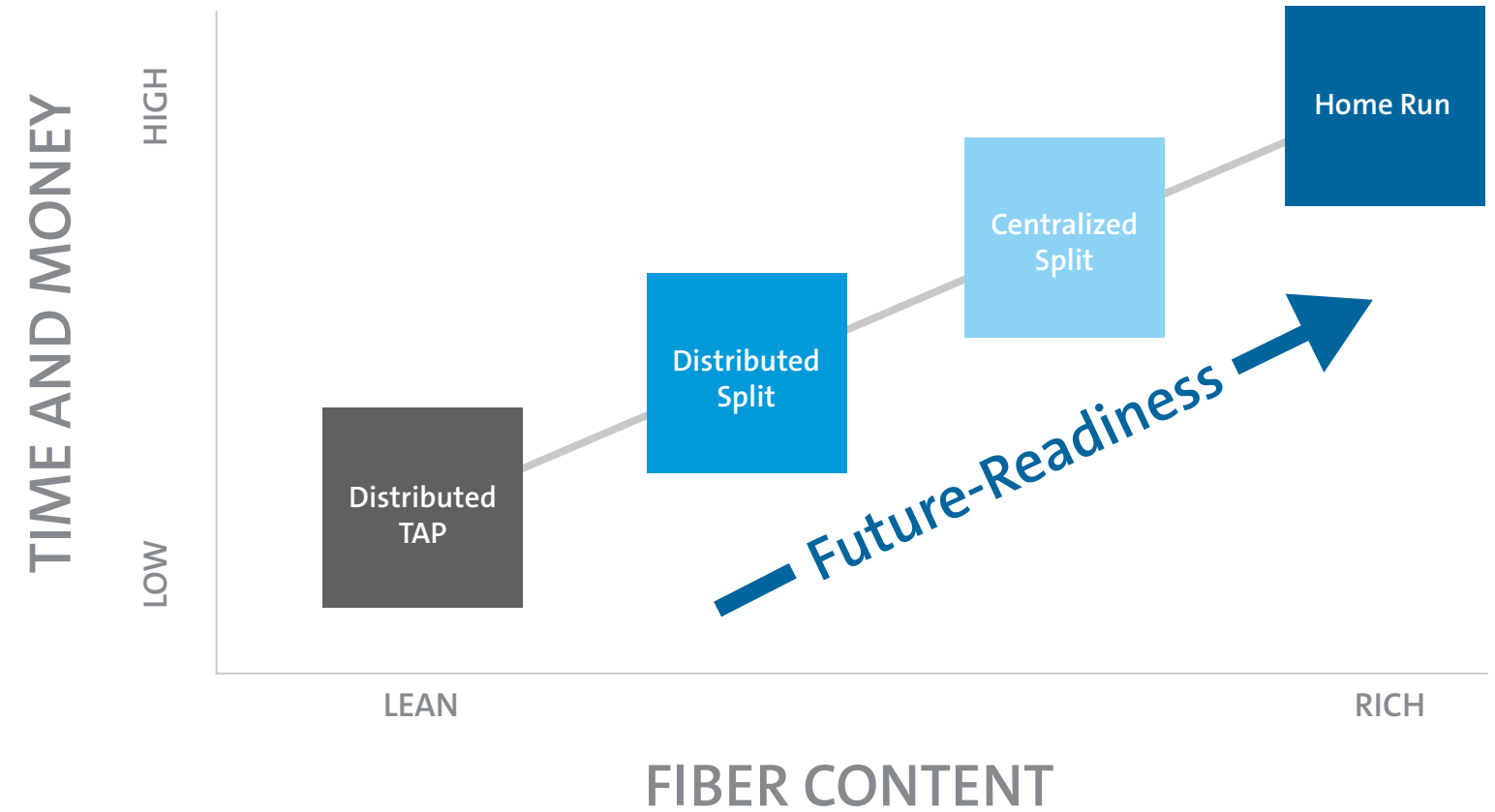
Learn more at www.corning.com/community-broadband

Position Your Network for Success



Not all networks are created equal. Fiber is the most cost-effective approach for your next deployment. It also offers more bandwidth, flexibility, and paths to future-readiness to keep your network competitive. Within fiber networks, there are many options to consider, including the cost of materials and labor, time to deploy, and the fiber richness of each of the four common architecture types.

Fiber Architecture Comparison



Home Run

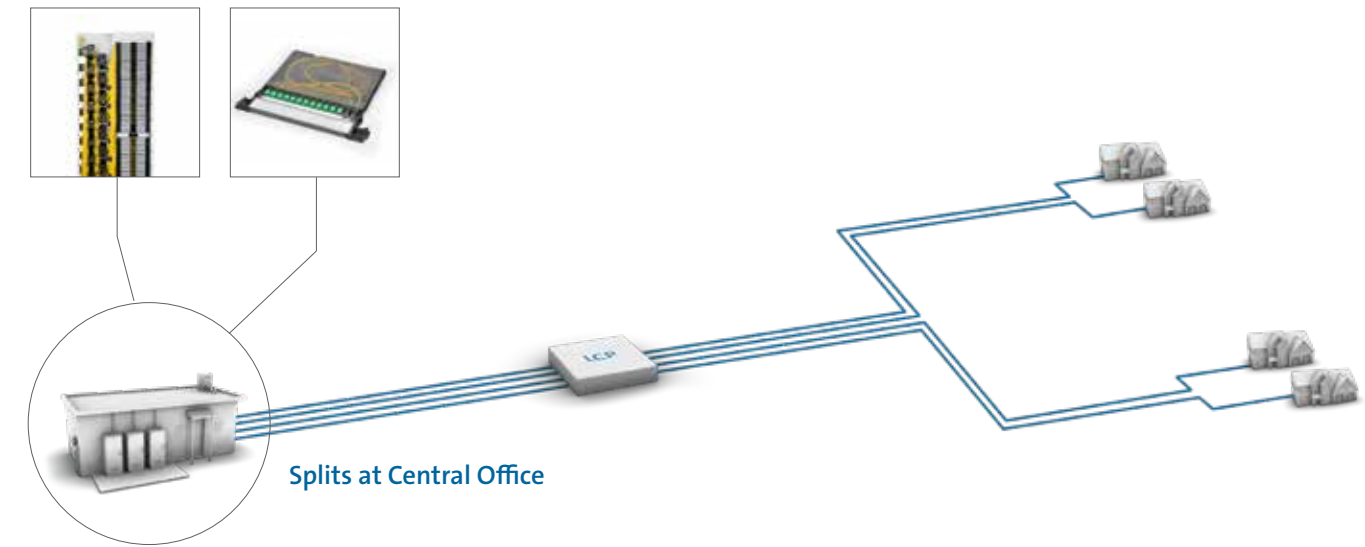
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An individual fiber connects each subscriber to the central office.

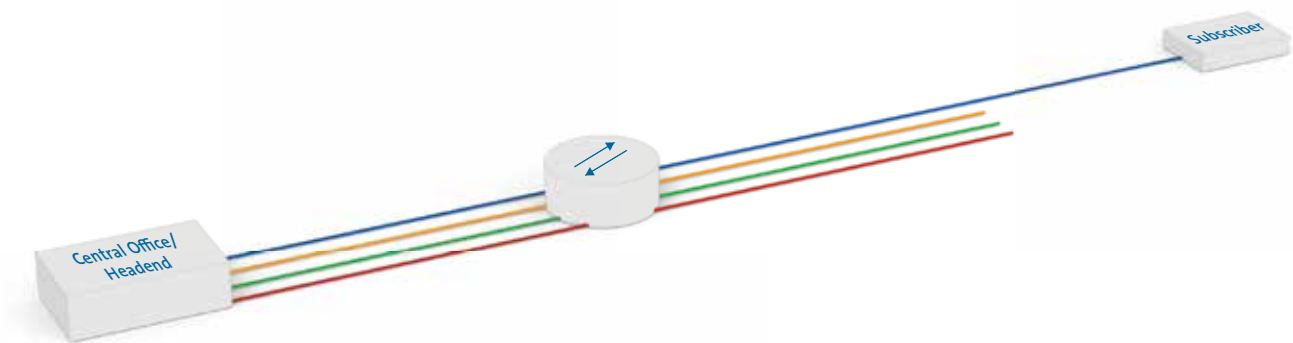
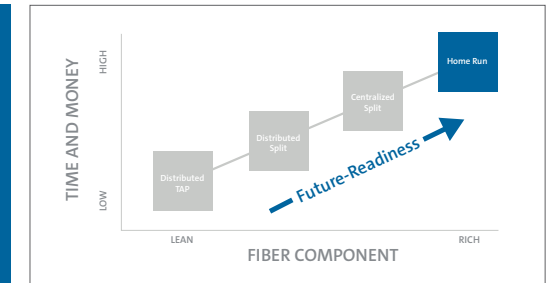
- Commonly deployed in densely populated areas near the central office
- Most fiber-rich option – 1:1 throughout the network

- Highest bandwidth capability
- Easiest upgrade path



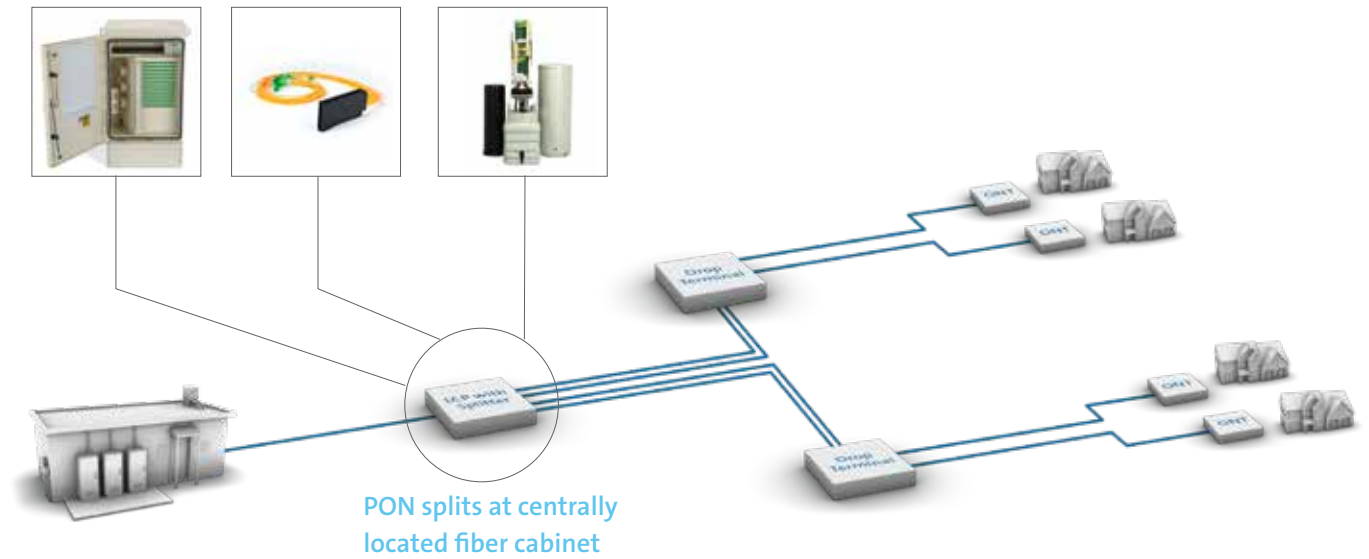
IMPORTANT CONSIDERATIONS

- Home Run networks are the most expensive to build because every potential end user location needs a dedicated fiber back to the signal source
- Optical cross-connect cabinets are large and require dedicated pad or pole space accommodations
- Splitters may be deployed in central office, offering high flexibility and port efficiencies



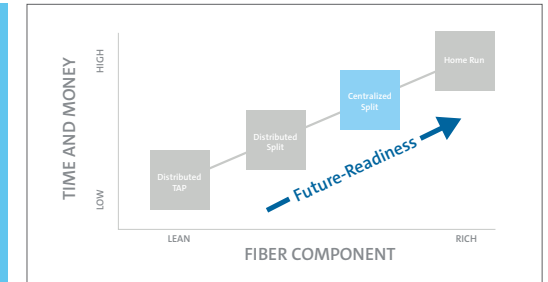
Centralized Split

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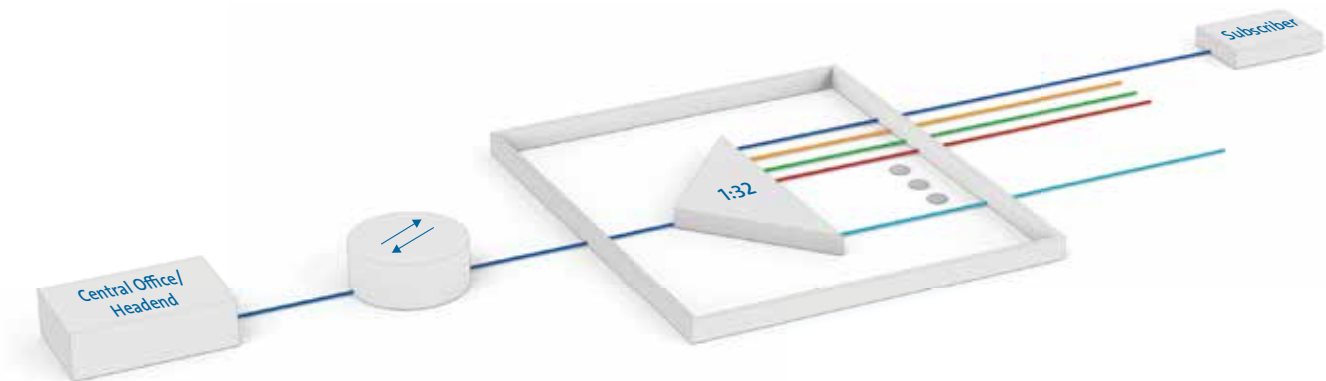
IMPORTANT CONSIDERATIONS

- Centralized cabinets are large and require dedicated pad or pole space accommodations
- High-fiber-count cables exiting the cabinet are costly for the length of the distribution



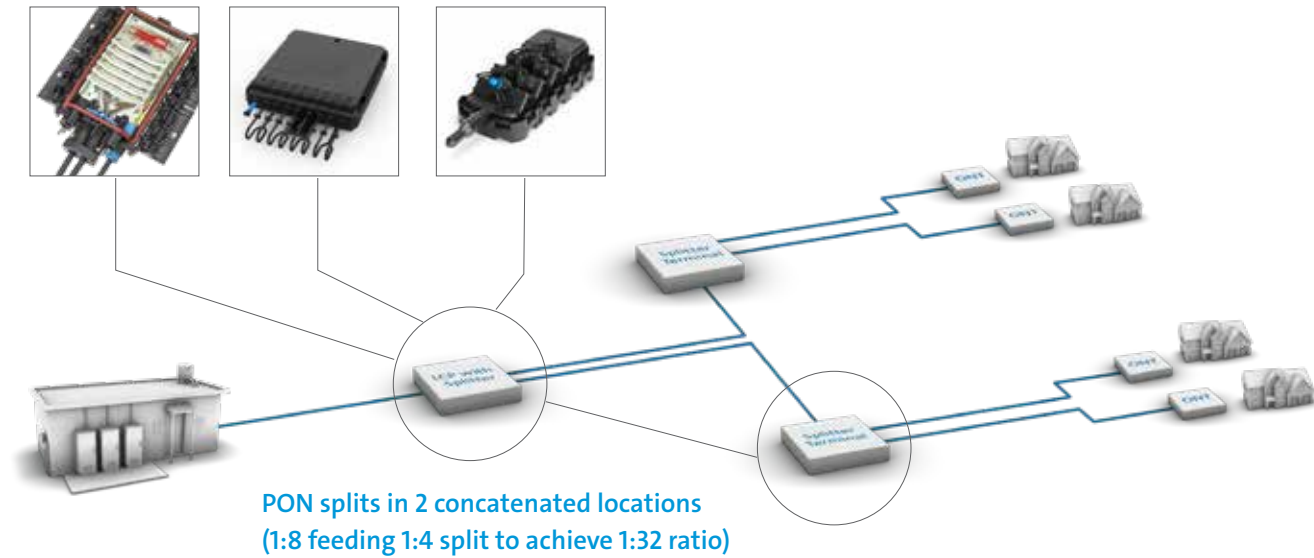
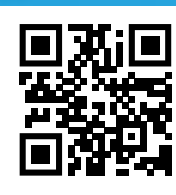
A dedicated fiber connects each subscriber to the local convergence cabinet (1:32).

- Commonly deployed where a large central office serves concentrated pockets of homes
- Lower-fiber-count feeder cables run from central office to cabinet with rich fiber downstream to subscribers (1:1)
- Easily change split ratios and transport technologies
- Centralized splitter location optimizes optical line terminal efficiencies



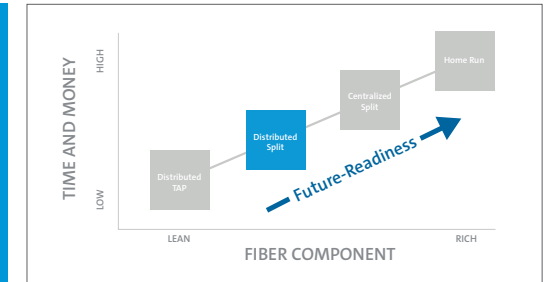
Distributed Split

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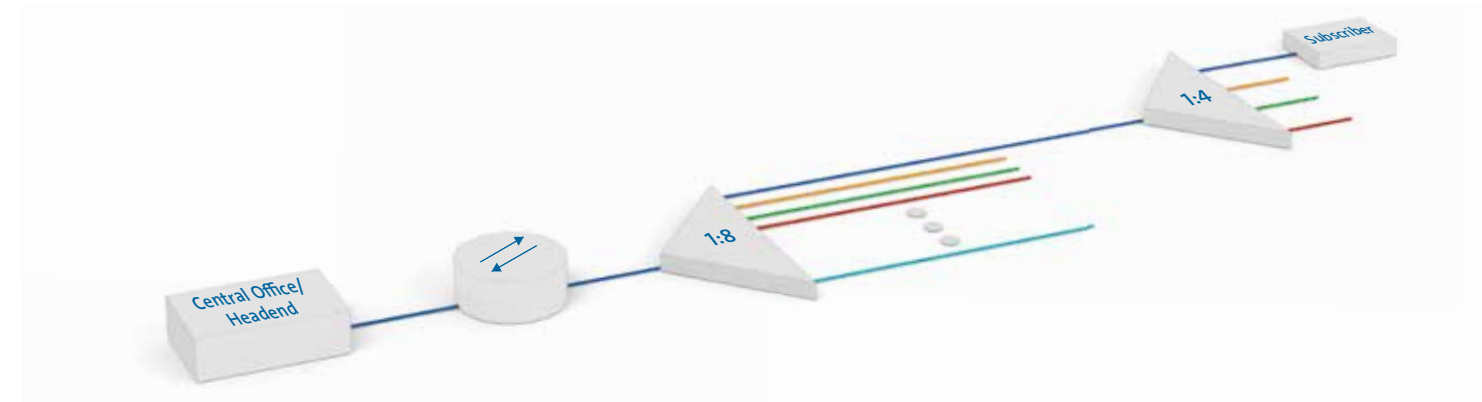
IMPORTANT CONSIDERATIONS

- Removes dedicated fibers from each subscriber to a central location (limiting future flexibility)
- Troubleshooting occurs at several split locations vs. a single interconnection point
- Adding spare fiber in the feeder and distribution enables future growth and rapid repairs
- With fully preconnectorized options, include spare ports in design



A dedicated fiber drop cable connects each subscriber to the closest splitter terminal access point.

- Leaner fiber architecture with lower-fiber-count feeder and distribution cables
- Flexible split ratio with combinations of 2, 4, and 8 splitters
- Reduced splitter access point size at split layer 1 vs Centralized Split
- Limited future flexibility



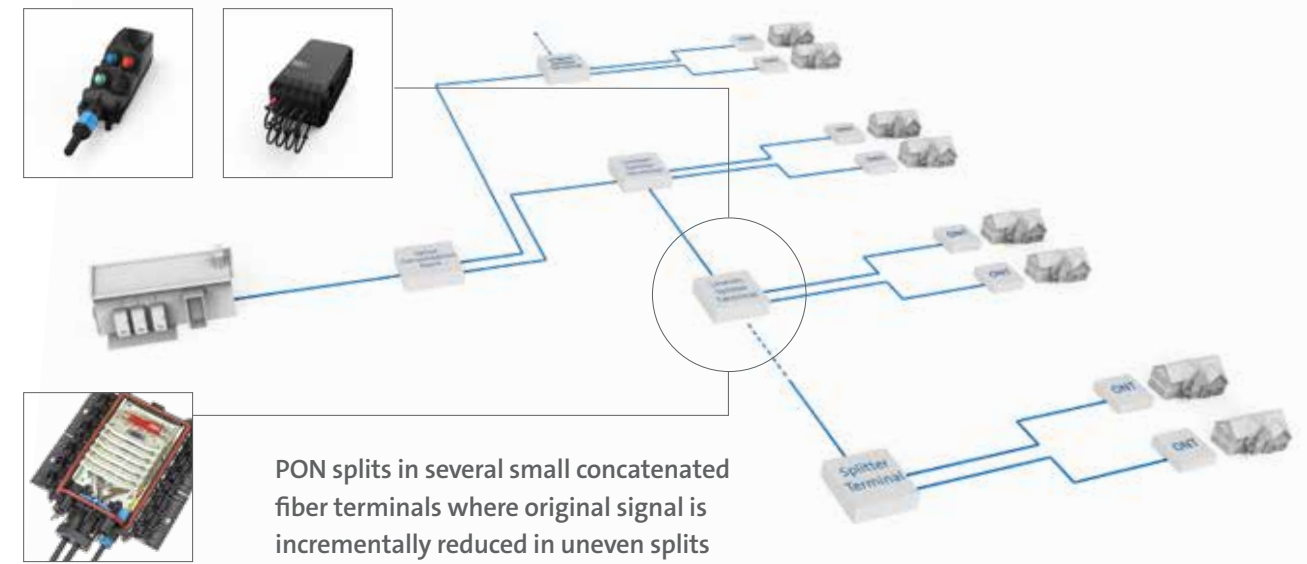
Distributed TAP

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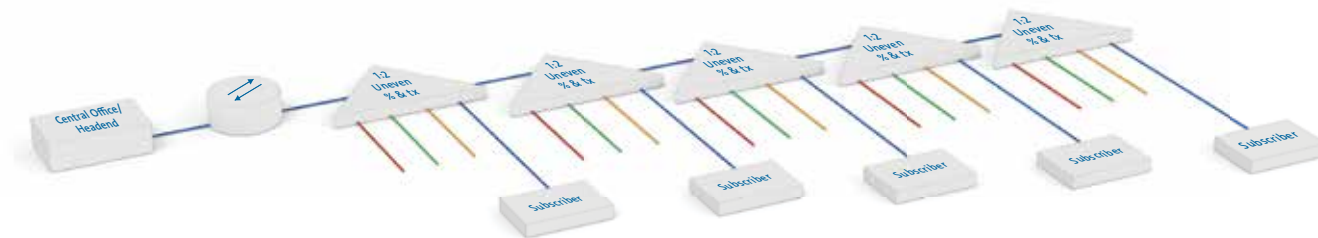
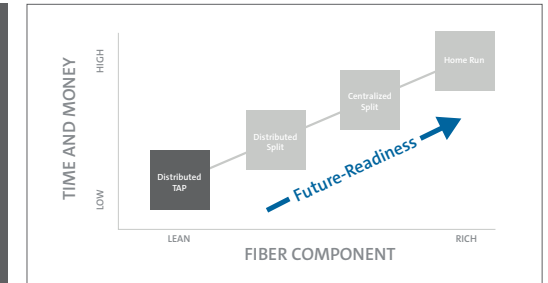
A dedicated fiber connects each subscriber to the splitter terminal.

- Suitable for sparsely populated areas or fringe/landlocked areas where future growth is unlikely
- Extremely low-fiber-count cables – distribution cables become single-fiber PONs
- Asymmetric tap splitter terminals are concatenated in series leveraging a single OLT for signal
- Often designed with no spare pass-through capability



IMPORTANT CONSIDERATIONS

- More complex network planning to ensure sufficient signal reaches last subscriber in sequence
- Limited bandwidth flexibility for subscribers sharing a single optical line terminal
- With fully preconnectorized options, include spare ports in design
- Adding spare fiber in the feeder and distribution enables future growth and rapid repairs
- Any disruption at a terminal impacts all downstream concatenated subscribers



Network Architecture Comparison

Learn more at www.corning.com/community-broadband

Consideration	Upfront CapEx	Upfront Design Complexity	Feeder Fiber	Distribution Fiber
Home Run	High	Low	Rich	Rich
Centralized Split	Moderate	Low	Lean	Rich
Distributed Split	Moderate	Moderate	Lean	Lean
Distributed TAP	Moderate	High	Lean	Ultra Lean

Typical Splitter Placement	Splitter Complexity	OLT Port Efficiency	Strategic Growth Potential	Upfront Testing Complexity	Troubleshooting Network Outage
Central Office (if splitter is used)	Low	Varies	High	Low	Low
Consolidation Cabinets/Closures	Low	High	High to Moderate	Low	Low
Terminals/Closures	Moderate	Low	Moderate to Low	Moderate	Moderate
Terminals/Closures	High	Low	Low	High	High



Home Run



- Most fiber-rich network
- For densely populated areas



Centralized Split



- Fiber-rich network
- For concentrated pockets of homes



Distributed Split



- Fiber-lean and economical network
- For areas where population density varies



Distributed TAP



- Ultra fiber-lean and economical network
- For fringe or lower-growth areas