

FALL 2026

VOL. 44 | NO. 3

ISE

**ICT SOLUTIONS
& EDUCATION**

Safeguarding
Outside Plant (OSP)
Infrastructure with
Sensing Cables p. 18

The 2026 ISE Network
Innovators' Awards p. 22

ISE EXPO 2026
in Review p. 30

Coordination Isn't
Integration p. 32



WHAT ISE EXPO'S KEYNOTE
SPEAKERS SAID ABOUT

Broadband's NEXT PHASE



SCAN TO
SUBSCRIBE OR
RENEW!



tii technologies

BUILT OUTSIDE. BUILT TO CONNECT.

Fiber Distribution Hubs. Cross-Connect Cabinets.
Multiple Sizes. Endless Configurations.

From compact Fiber Distribution Hubs to high-capacity Cross-Connect Cabinets, Tii Technologies delivers outdoor solutions that keep your network secure, organized and ready for whatever comes next.



FDX5 Cross-Connect Cabinet



FDH5 SERIES

Up to 144 Ports
Compact. Flexible.
Field-ready.



FDX5 SERIES

High-Capacity Cross-Connect
Flexible. Scalable.
Network-ready.



FDH6 & 7 SERIES

Up to 288-432 Ports
Built for network growth.
More capacity. More flexibility.



FDH8 & 9 SERIES

Up to 576-864 Ports
Maximum density.
Maximum flexibility.

ONE PLATFORM. ENDLESS POSSIBILITIES

Multiple port counts. Custom stub lengths. Configurations built around your network.

- ✓ BUILT FOR OUTDOOR ENVIRONMENTS
- ✓ CUSTOM CONFIGURATIONS AVAILABLE
- ✓ EASY INSTALLATION & MAINTENANCE

LEARN MORE
ABOUT TII
FDH SERIES



“Trying to slap automation on something without first standardizing and simplifying it is just putting a Band-Aid on the problem.”

BROADBAND'S NEXT PHASE – PAGE 8

8 INDUSTRY TRENDS Broadband's Next Phase

ISE EXPO 2026's keynote speakers examine how convergence, automation and workforce readiness are reshaping broadband operations.

18 NETWORK RELIABILITY Safeguarding Outside Plant (OSP) Infrastructure with Sensing Cables

Distributed fiber optic sensing can turn dark or purpose-built fiber into an early warning system for threats along routes.

22 NETWORK INNOVATORS' AWARDS The 2026 ISE Network Innovators' Awards

ISE Magazine proudly announces the award-winning honorees of the 2026 ISE Network Innovators' Awards program.

30 INDUSTRY TRENDS ISE EXPO 2026 in Review

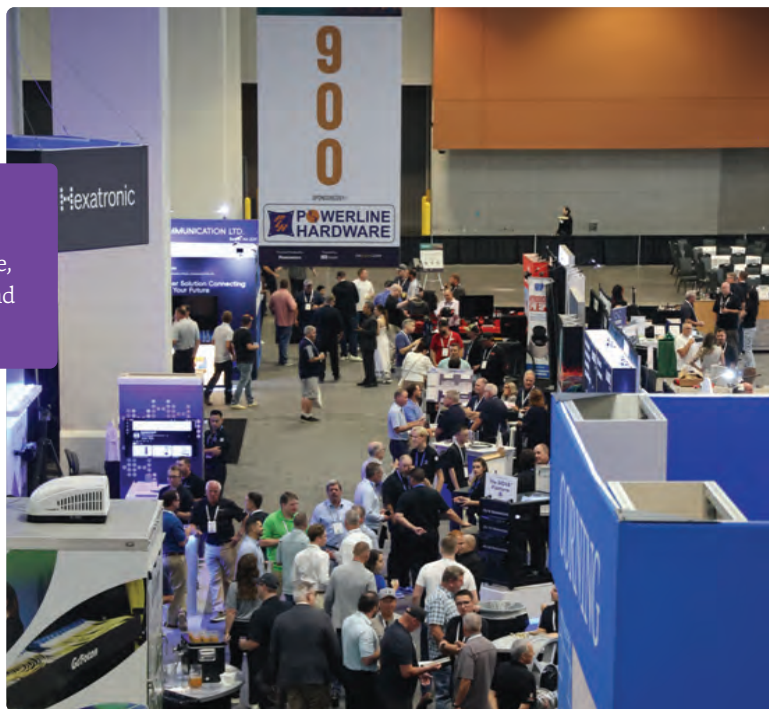
ISE EXPO 2026 brings broadband infrastructure to Nashville.

32 NETWORK TRANSFORMATION Coordination Isn't Integration

ISE survey findings and an ISE EXPO panel reveal why integrated network planning must continue through procurement, construction, operations and future expansion.

CONTENTS

FALL 2026



CONTENTS

FALL 2026

IN EVERY ISSUE

5 EDITOR'S NOTE **Complexity is Constant**

As networks converge across fiber, wireless, satellite, automation and AI, the challenge is increasingly about integration, operations and managing complexity.

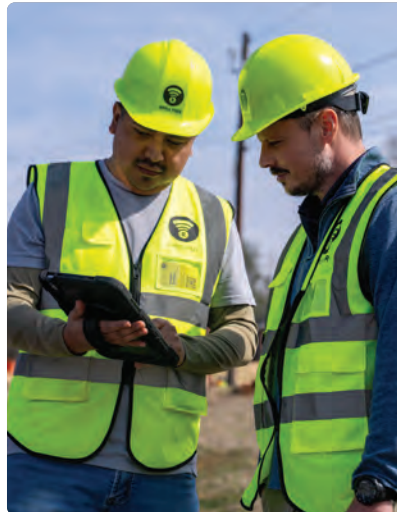
6 NETWORK, AI AND SECURITY EXPERT **Secure AI Networking**

A new Zero Trust framework combines continuous verification, transaction monitoring and human oversight to defend against AI-era ransomware.

14 EXECUTIVE INSIGHTS **Executive Insights with Greg Wilson, Ripple Fiber Founder and CEO**

Ripple Fiber Founder and CEO Greg Wilson discusses the capital discipline, data-driven planning and integration strategies behind the company's multistate growth.

29 ADVERTISER INDEX



Market Leader, Digital Infrastructure

Peter Fretty
pfretty@endeavorb2b.com

Editorial Director

Patrick McLaughlin
pmclaughlin@endeavorb2b.com

Head of Content

Hayden Beeson
hbeeson@endeavorb2b.com

Managing Editor

Lisa Weimer
lweimer@endeavorb2b.com

Art Director

Kelli Mylchreest

Associate Publisher

Carrie Kirkbride
ckirkbride@endeavorb2b.com

ISE EXPO Account Executive/Sales

Christine Paplaczky
cpaplaczky@endeavorb2b.com

Production Manager

Josh Troutman
jtroutman@endeavorb2b.com

Ad Services Manager

Melissa Meng
mmeng@endeavorb2b.com

Circulation Manager

Laura Moulton
lmoulton@endeavorb2b.com



ENDEAVOR BUSINESS MEDIA, LLC

CEO Chris Ferrell

COO Patrick Rains

CDO Jacquie Niemiec

CALO Tracy Kane

CMO Amanda Landsaw

**EVP Infrastructure &
Public Sector Group** Kylie Hirko

**VP of Content Strategy, Infrastructure
& Public Sector Group** Michelle Kopier

ISE Magazine USPS Permit 1511, ISSN 2470-0517 print, ISSN 2470-0525 online is published 4 times annually, spring, summer, fall, winter by Endeavor Business Media, LLC, 201 N Main St., 5th Floor, Fort Atkinson, WI 53538. Periodicals postage paid at Fort Atkinson, WI, and additional mailing offices. **POSTMASTER:** Send address changes to ISE Magazine, PO Box 3257, Northbrook, IL 60065-3257. **SUBSCRIPTIONS:** Publisher reserves the right to reject non-qualified subscriptions. Subscription prices: U.S. \$32.96 per year; Canada/Mexico \$51.50 per year; All other countries \$118.45 per year. All subscriptions are payable in U.S. funds. Customer service can be reached toll-free at 877-382-9187 or at ISE@omeda.com for magazine subscription assistance or questions.

Printed in the USA. Copyright 2026 Endeavor Business Media, LLC. All rights reserved. No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopies, recordings, or any information storage or retrieval system without permission from the publisher. Endeavor Business Media, LLC does not assume and hereby disclaims any liability to any person or company for any loss or damage caused by errors or omissions in the material herein, regardless of whether such errors result from negligence, accident, or any other cause whatsoever. The views and opinions in the articles herein are not to be taken as official expressions of the publishers, unless so stated. The publishers do not warrant either expressly or by implication, the factual accuracy of the articles herein, nor do they so warrant any views or opinions by the authors of said articles.



Complexity is Constant

As broadband technologies converge, the challenge is increasingly about making them work together.

BROADBAND NETWORKS ARE becoming more capable, but they are not becoming simpler. That idea runs through much of this issue.

In our cover story, leaders from ISE EXPO 2026 discuss what happens as fiber, wireless, satellite, automation, and AI increasingly become parts of the same operating environment. The challenge is shifting away from choosing the right technology towards integrating those technologies in a way that is supportable while keeping the complexity largely invisible to the customer.

Our original research reaches a similar conclusion from a different angle. Many respondents told us their organizations already coordinate planning across infrastructure teams. But coordination at the beginning of a project does not necessarily mean integration throughout its life. Decisions made during design and construction eventually land with operations teams, technicians and future employees.

That emphasis on long-term operation also appears elsewhere in the issue. We look at distributed fiber optic sensing as a way to turn outside plant into a source of real-time information, Mark Fishburn examines how Zero Trust networking changes in the age of AI, and Ripple Fiber founder and CEO Greg Wilson discusses the discipline required to scale a fiber operation across multiple markets.

We also recognize the winners of the 2026 ISE Network Innovators' Awards. The products honored this year span fiber, power, network intelligence, connectivity and field tools, but share a common goal: helping operators perform their complex work more efficiently and reliably.

Thanks for reading.



Hayden Beeson

HEAD OF CONTENT

hbeeson@endeavorb2b.com

Follow Hayden on LinkedIn for further conversation and insights.

[@hayden-beeson-b2551a210](https://www.linkedin.com/in/hayden-beeson-b2551a210)

Visit www.isemag.com/contribute for more information on submitting an article to ISE Magazine in print, digital, and online.

Secure AI Networking

Ransomware Prevention in the AI Age

SINCE WRITING THIS summer's article on the state of AI, I spent much time looking at the impact of changes in AI, security and networking as it evolved in real time. An important question was, "Did these changes break Zero Trust Security Networking or the methodology in my 'Assume Breach' article, written, unbelievably, just 18 months ago." The world has changed so much since then. I had to see if the challenges regarding AI identity and untrustworthy rogue models now prevented the interception of ransomware attacks. I was not confident!

However, as you will see by the end of this article, I came up with a new Zero Trust Framework that is not reliant on AI adhering to guardrails, where Identity can be verified, and where the premise is that threat actor ransomware attacks can be caught in a Zero Trust Framework. At the same time, that ransomware is rapidly increasing, but so is the astounding, exponential pace of AI detecting and fixing vulnerabilities in mainstream software, strengthening an organization's defenses and business operations.

A novel safety net adds human approval for high-risk transactions. Also, the realization that, just like cybersecurity, assuming that AI can be 100% secure is not an achievable goal. The original reason, the "why": **minimizing ransomware and other attacks, is now enhanced.**

The reasons why breaches are best detected and removed in the network were covered in the Assume Breach article [Cybyr.com/assumebreach](https://cybyr.com/assumebreach). Here, the focus is on the "what" and "how" of the approach and calls out new relevant issues.

Figure 1 shows the Service Provider Zero Trust approach from a network transactional perspective since almost every breach traverses a network. Larger enterprises can also use the approach directly. The description and comments follow.

"Escalation of high-impact actions to now require human approval is an important safety net."

Examples of Subject and Target Actors who conduct transactions.

1. Users communicating with a remote host, database or hosted application via user portal, agent software, data center or cloud application, etc.
2. Software and applications of any kind, including the system software that controls this network system—easily the most common type of actor.
3. An Agentic AI system, software or a device conducting automated functions. Increasingly, these are now proxies for user functions.
4. Devices such as IoT devices, Medical Robots or critical infrastructure devices in OT networks. They could also be systems that act as a proxy for a non-intelligent device.

Transaction Endpoints

Where the Subject Actors begin the journey across the network and then finally exit at their destination. Function: the



MARK FISHBURN

Web cybyr.com

Email mark@cybyr.com

LinkedIn linkedin.com/in/markfishburn

Transaction Endpoint must get permission from the Transaction Manager to begin a transaction. Nothing and no-one are trusted.

The Transaction Manager

Verify that the requested transaction is permitted by the **Identity Manager** and **Authentication Software**, and that the requested functions are within the approved **Access Control** policies for that actor, etc. It then completes the pairing by checking the permission of the Target Actor to conduct the transaction. The identity of Agentic AI Actors must be carefully verified.

A Critical new safety net approach requires human approval to allow all high-risk transactions (i.e., those typified by Ransomware attacks) to be quarantined pending human approval as a critical collaboration between humans and systems as inspired by the Spring article at cybyr.com/integration.

Once authorized, the Transaction Manager intercepts the transactions, calling upon integrated **security functions** designed to detect and remove threats, including examining the payloads. This includes detection of out-of-policy or altered requests, use of Extended Detection and Response Software and many more shown in Figure 1 and described in detail at cybyr.com/san.

When a transaction begins, the **Transaction Manager** adds it to the Monitoring Database.

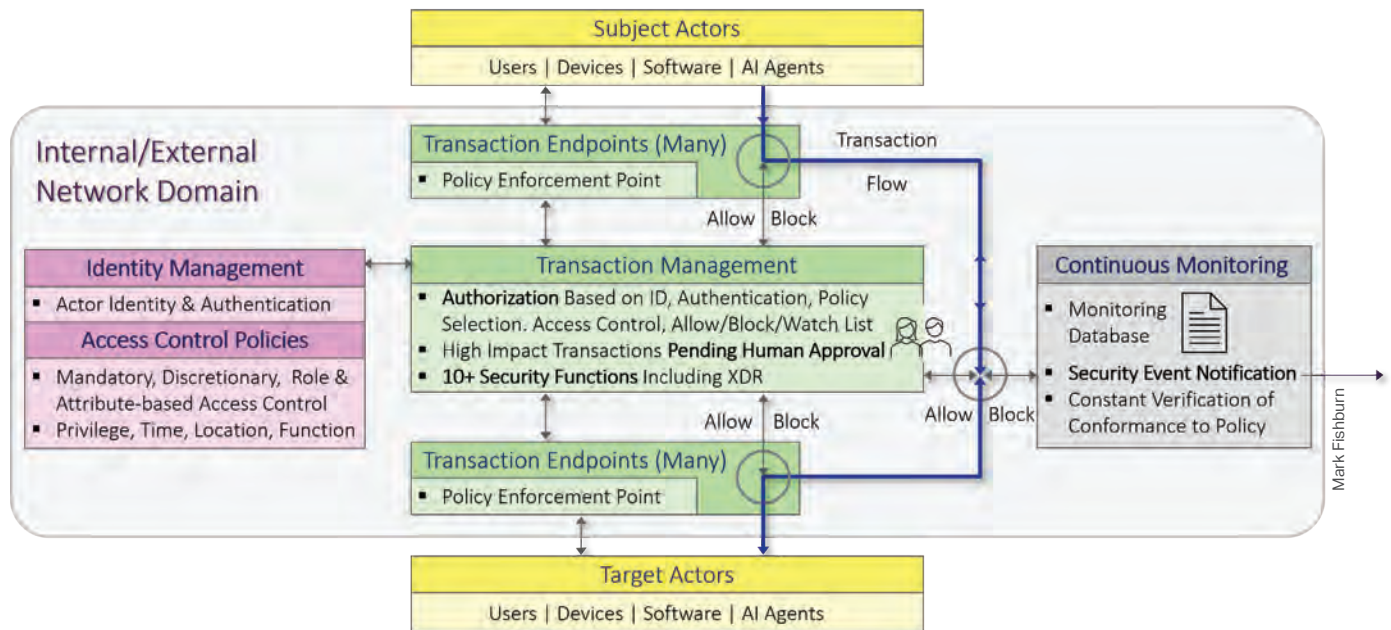


Figure 1. Service Provider Zero Trust Framework

Continuous Monitoring Functions

Notify the Transaction Manager when changes occur that may result in the transaction being blocked or quarantined. This includes functions being initiated by AI agent software. When a transaction is blocked or quarantined pending approval, a secure event notification is initiated. This is likely to be at an external Network Operations Center.

New Rules of Operation

In all cases, software supplied by third parties must be verified and never trusted. This is a developing function as using the latest AI models to discover vulnerabilities and conduct real-time patching becomes the norm. It would be considered very high risk to use software created using AI vibe coding without checking the code the AI agent created.

Proper self-attestation and demonstrable use of security best practices — DevSecOps, SBOM, etc. External NOC systems should not use AI Agents that can initiate transactions.

Why I wrote This Article

Nothing here removes the need for an AI implementation plan or adherence to the

organization's Security Policy. In fact, this article and ongoing work on my site is intended as a framework for such plans or for writing RFPs.

Conclusions and Lessons Learned

- The Zero Trust principle: "Assume Breach" applied by service providers or enterprises with a strategic framework to intercept attacks is not just confirmed but is enhanced.
- The Zero Trust principle: "Never Trust, Continually Verify" becomes even more important.
- The use of AI to detect software vulnerabilities and the requirement for all software to conform to high standards and be automatically updated is taken to a new level.
- We do not assume that verifying an agent once is sufficient. Even if they adapt and transform and spawn new agents, their identity must still be constantly monitored and verified.
- The approach is scalable and can grow organically to verify and enforce the transaction independently of the actor.
- Verifying the identity of an actor must always be in the context of when, from where and the permissible actions plus what the target actor will allow.

- Continuous monitoring after authorization to detect agentic or out-of-policy shifts is essential.
- Escalation of high-impact actions to now require human approval is an important safety net.
- The approach does not attempt to provide a perfect solution but greatly strengthens an organization's resilience, especially when applied with enhanced defensive strategies.

"Continuous monitoring after authorization to detect agentic or out-of-policy shifts is essential."

As usual, the journey is never complete. There's much more detail with ongoing developments on my website, at cybyr.com/san. If you need help with your network plans or just have questions/comments, email me at mark@cybyr.com. ■

Mark Fishburn is President of Cybyr.com, a provider of strategic network, AI, cybersecurity, software, and marketing services.

Broadband's Next Phase

Across two ISE EXPO keynote panels, operators and industry leaders discussed convergence, AI, automation, workforce readiness and why the job does not end when the network is built.

BY HAYDEN BEESON

Early in ISE EXPO 2026's closing keynote, Steve Harris asked whether convergence had made anyone's business simpler. He called for a show of hands. None went up.

Near the end of the discussion, Harris returned to the same idea. "Convergence didn't eliminate complexity," he said. "It shifted to execution."

That observation connected the show's opening and closing keynotes. Fiber, mobile, fixed wireless and satellite all entered the conversation, but the speakers spent little time debating which technology would win. Their focus was what happens when operators put those technologies to work together.

The opening keynote, moderated by Randall René of Waypoint 33, featured Ashley Church, General Manager of GFiber's West Region; TJ Plumley, Chief Field Services Officer at United Fiber; Kristina Harrison, Executive Vice President of Operations at Brightspeed; and Dave Stehlin, CEO of the Telecommunications Industry Association (TIA).

The closing keynote, sponsored by UCL Swift, was moderated by Steve Harris, the company's Vice President of Sales and Marketing. The panel featured Shirley Bloomfield, President of ShirleyConnected LLC and former CEO of NTCA-The Rural Broadband Association; Bo Gresham, Chief Revenue Officer at



Left to right: Randall René, Waypoint 33; Ashley Church, GFiber; TJ Plumley, United Fiber; Kristina Harrison, Brightspeed; David Stehlin, TIA.

Dycom Industries; and Michael Hamilton, Director of Operations for C Spire's Fiber Business Unit.

Together, the two conversations offered a snapshot of where the industry is focused, and what's coming next.

Convergence Opportunities and Complexities

Convergence, the show's theme, connected both keynotes. Operators are now leaning on a broader mix of technologies to reach customers and support new services. This flexibility is particularly valuable in markets where a single type may be rendered impractical by terrain, density, cost, or timing.

The speakers agreed, though, that a wider mix of technologies does not simplify things.

"For convergence to work, the consumer doesn't care how they get connectivity," said Church. "It's our job to handle the complexity internally and make it simpler for customers, consumers, and operators."

While an operator can combine networks behind the scenes and present one service experience to the customer, each additional technology will bring its own complexity through planning, construction, and support.

Hamilton said operators can be reluctant to move beyond an architecture they know. Familiar technology comes with familiar procedures and employees with experience who understand how to deploy and maintain.

Gresham emphasized the scale of such a change during a multiyear construction program.

"The amount of effort required to make an architectural change across the entire process, through your employees, vendors, and materials, is tremendous," he said.

Bloomfield added identity as another consideration for community-based providers.

"Sometimes it's branding," she said. "You think of yourself as, 'Well, we're a fiber provider.' What does it mean if I add a mobile play?"

That shift can expose siloed decision-making and require technicians to support technologies outside the legacy network they know.

The speakers' comments suggested that the winning technology mix will depend less on labels than on an operator's ability to make the mix function as one dependable service.

Making the Network Disappear

Church's answer to a question about GFiber's next bold move was simplification. Speed will remain important, she said, but capacity and coverage are now baseline expectations. The harder task is reducing the effort required of the customer.

"Consumers don't want to contact us," Church said. "They don't want to be in touch with us. As long as they're connected, they just want it to work."

Hamilton described the same objective as making the network invisible.

"They do not care about the deployment method," he said. "They simply want to know it works when they walk in the door." That expectation turns installation, support, and other internal matters into part of the product.

Harrison pointed to the ordering experience offered by satellite providers. "I can have a box delivered in two days, set it up and have it work," she said.

Plumley saw that tradeoff firsthand, noting that United Fiber had received strong interest in fiber service in one area for months, but the construction schedule took time. By the time the cooperative was ready to build, he said, about 80% of the group had already gone with Starlink.

"It's hard to convince someone to switch away from something that's working," Plumley said.

The same friction can slow migrations from legacy networks.

"Customers have inertia," Harrison said. "They don't wake up in the morning and say, 'I need a new technology in my home.'"

A voice-only or DSL customer may see little reason to change as long as the existing service still works. Moving to fiber can require placing an order, scheduling an appointment, and accepting new equipment. Operators therefore have to make the transition easy enough that customers see the benefit instead of an inconvenience.

AI and Automation

During the opening keynote, René asked the panelists to finish a sentence: The biggest thing slowing AI adoption in the industry is not the technology; it is what?



Church answered organizational readiness. Plumley pointed to change leadership and resistance. Harrison said organizational adoption. Stehlin chose attitude.

That exchange exemplified the keynote's treatment of AI and automation. The tools can help operators schedule work, analyze performance and reduce repetitive tasks. The value of those tools, though, still depends on whether the organization is prepared to change the work around them.

Church said automation has to remove work. It should not add another screen, dashboard, or reporting requirement to an employee's day.

"Automation will shine a bright light on all the inconsistencies in your processes and standards," she said. "Trying to slap automation on something without first standardizing and simplifying it is just putting a Band-Aid on the problem."

Automation can expose a broken process, but it cannot decide who owns the process or make disconnected teams work together.

Harrison made the same distinction from an operations perspective.

"This isn't about automating existing bad processes," she said. "It's about eliminating and transforming the way you perform those processes."

Plumley urged operators to look at complete workflows. A scheduling improvement will have limited effect if dispatch, inventory, customer communication, and technician reporting remain disconnected. One department may become faster while the customer's end-to-end experience changes very little.

"The challenge is that we keep looking at individual pieces of processes," Plumley said. "We're looking at one stage instead of looking at the process holistically."

United Fiber's electric and telecommunications operations offered a practical example. Fiber improved meter reading at substations, reduced repeat trips, and created connections for security cameras and linemen. The technologies came together on the network, but the supporting systems and business models remained separate.

Legacy systems make the problem harder. Harrison said specialized groups often remain aligned around particular network types. Unless an operator retires older platforms as customers migrate, the new network becomes one more environment to operate rather than a replacement.

Her practical challenge to the audience was to select a legacy system, process, or technology and put a retirement date on it.

The opening panel speakers treated AI as a tool that can accelerate good operating decisions, but not as a substitute for standard processes, clear ownership, and employees who understand the work.

Execution Still Comes Down to People

Hamilton offered an example of how workforce readiness can directly affect network reliability.

"I can think of a PON deployment from maybe 10 years ago," he said. "The deployment of the fiber—everything was smooth, everything was good. Within about a month, we started seeing light-level fluctuations within the network. We eventually found that there was a training gap and a connector had not been installed properly," Hamilton continued. "That was all it was."

Finding it, however, required tracing the trouble through multiple areas of the network until the team isolated the source.

"It's this group. It's this team. It's this guy," Hamilton recalled. "And then he never got the proper training."



Hamilton's story illustrated why training belongs in the same conversation as network design. A specification can describe the optical budget and performance target, but it can't ensure that every field tech has proper knowledge and experience.

Harris offered another example. He described an operator team that watched a webinar and a PowerPoint presentation and was then considered certified to perform fiber work.

"You have to provide hands-on, tactile, practical training," Harris said.

Gresham framed the industry's workforce challenge as both a recruiting problem and an opportunity. He began his career in 1997 as a ground hand. At the time, he said, he needed the hours and had a young child; it was a job, not necessarily a career path. Today, he said, the industry can offer a broader range of career opportunities that include new construction methods, automation, and AI.

That gives employers a different recruiting message. Gresham suggested asking prospective workers, "Do you want to learn about AI? Let me show you how AI helps us build."

The question, he said, is how companies approach training and help new employees see a future in the industry.

Hamilton said telecommunications has not always been presented as an attractive career to younger workers, although he sees interest returning to the skilled trades. Bloomfield added that smaller operators may struggle to compete with larger companies on compensation and incentives. That makes development and retention as important as recruiting.

Operators also must give employees the practical training they need to succeed in the field. Otherwise, a workforce challenge can quickly become an operating and customer-service problem.

"I guarantee there are people in this room who have sent the same technician to the same customer seven times for a trouble call," Hamilton said. "The customer is complaining, and the company has not invested in training. We have to get it right the first time."

Harris described the resulting ripple effect: another truck roll increases operating costs, and an unresolved problem can cost the company a customer.

The Build is Only Step One

While broadband programs are typically measured in route miles and passings, those do not show whether customers adopt the service, whether the network is economically feasible to maintain, or whether the operator can support the offerings the network makes possible.

Bloomfield challenged the idea that a completed fiber build marks the finish line.

"There is a mindset in the industry that says, 'I built my fiber network. I have fiber to the home. I am done,'" she said. "We have to get past that because the build is only step one. The job begins once you build the network."

Hamilton translated that point into total cost of ownership. Operators have to account for maintenance, trouble calls, and the



Randall René speaking to keynote audience.

service ecosystem that surrounds the plant. A construction choice that saves money at the beginning may create a large problem if it generates repeat dispatches or requires skills the operator cannot readily supply.

"I built the network, but how am I going to operate and maintain it, handle trouble calls and manage the entire ecosystem?" Hamilton said, describing the question operators must be prepared to answer.

Gresham said the answer is not to force one construction method onto every location. A single program may require different methods based on terrain, density and other conditions. The objective is a toolbox broad enough to fit the work, supported by quality and repeatability across crews and markets.

Asked whether the greater risk was moving too slowly or building incorrectly, Gresham chose the latter.

"If you are moving slowly, there are levers we can pull to speed you up," he said. "If you build it wrong, you can waste a lot of money."

Hamilton agreed. "You get one shot," he said. "You have to build it right."

The same logic applies to access technology. Fiber remains the preferred platform for many providers, but fixed wireless or satellite may be more practical in some places. The keynote speakers did not present technology neutrality as an excuse to lower expectations. They presented it as a reason to use the right option (provided the company can operate and support it reliably).

Bloomfield encouraged rural providers to think of fiber as a platform rather than a completed product. Operators are using their networks to support mobile service, cybersecurity, business connectivity and other offerings. Those opportunities can deepen a provider's relationship with its community, but every new service adds responsibilities and can stretch a smaller organization.

Bloomfield pointed to Direct Communications, which expanded beyond fixed connectivity with its Direct Mobile offering. She

also cited Randolph Communications in North Carolina, which has used its fiber platform to pursue business services, cybersecurity and hospital connectivity. The examples showed how a community provider can extend its existing network and customer relationships without attempting to build every capability alone.

That led Bloomfield to one of the closing keynote's most useful questions: "What kind of company do you want to be?"

A provider may be technically able to offer a long list of services without having a clear reason to offer all of them. Starting with the customer need can help determine which capabilities belong inside the company, which call for partners and which do not fit the business.

For rural operators, Bloomfield said trust remains an important advantage. These providers often know their communities and have long-standing customer relationships. Their constraints are scope and scale.

"Part of the challenge will be taking the reputations they have spent years building in their communities and transferring that trust into the business transformation and customer experience they need to deliver," Bloomfield said.

Partnerships can help smaller providers add capabilities without sacrificing the local accountability that made those relationships valuable. The provider still needs a clear view of its role and the experience it intends to own.

What to do Next

The two keynotes covered a large area, but many of the recommendations were intentionally small and practical.

Plumley urged operators to find one process bottleneck and work through the entire flow rather than optimizing a single department. Harrison challenged companies to choose one legacy system or process and commit to retiring it. Church called for automation that actually removes work and for organizations that can adapt continuously, instead of treating transformation as a major event that occurs every few years.



Steve Harris speaking to keynote audience.

Stehlin reminded the audience that "trust is the coin of the realm." For him, that meant following through on organizational commitments, including the dates operators set for retiring legacy systems. "Once people stop trusting you," he said, "your ability to have an impact falls apart."

The closing panel added a field-level version of the same advice: Use the appropriate construction method, train people through hands-on work and evaluate decisions across the life of the network.

Church summarized the required mindset near the end of the opening keynote. "None of us can predict the future," she said, "but we can prepare ourselves to adapt to it more quickly."

None of the speakers claimed that the next phase of broadband would be simple. But they did describe a more capable industry facing a more demanding operating challenge.

The networks can combine more technologies, reach more places and support more services than before. Customers will still judge them by whether the connection works reliably and is easy to use. ■



Left to right:
Steve Harris, UCL Swift;
Shirley Bloomfield,
ShirleyConnected LLC; Bo
Gresham, Dycom Industries;
Michael Hamilton, C Spire.

ENABLING HARDENED
CONNECTIVITY
FOR ALL

USCONEC

HEC-TAP

HARDENED CONNECTOR PLATFORM

- OptiTap®-compatible connectors & adapters
- GR-3120-CORE compliant
- Standard and mini flat drop versions



RUGGED DESIGN. PROVEN PERFORMANCE.

Scan to learn more



A harsh-environment connector with proven
performance & reliability from your trusted partner.

WWW.USCONEC.COM



EXECUTIVE INSIGHTS WITH **Greg Wilson**

RIPPLE FIBER FOUNDER AND CEO

Greg Wilson discusses the discipline, integration strategy and leadership approach behind Ripple Fiber's multistate expansion.

BY HAYDEN BEESON

ISE: Ripple has grown from a startup into a multistate operator. What are the top operational improvements that allowed the company to expand at that pace?

Greg Wilson: Capital discipline is the foundation. Every dollar spent needs to ultimately convert to passings and subscribers. The build engine has proved to be just as important. This all starts with our government affairs team, who liaise with the cities and counties in which the homes we intend to serve are located. This determines the speed that we can run our construction in different markets. We also constantly assess which business functions should be regionalized versus centralized in our Charlotte, North Carolina office.

We've refined our construction process and vendor coordination to the point that we can deploy fiber in multiple states at once, without depleting resources. Planning and engineering are where that efficiency begins. During that stage, we're modeling construction cost and sequencing, so we're not solving problems mid-build. None of those elements work without strong municipal relationships. Securing permits and having agreements move quickly is greatly influenced by the trust we build with local officials, and that trust is something you have to earn every time, in every new market.

Additionally, we have made sure that we simplify our quality assurance to where we can measure a user's actual experience and the real quality of the network rather than qualifying the periphery.

ISE: What are the most important factors Ripple considers when selecting a market for a greenfield fiber build? How have

data and technology changed that decision-making process?

Wilson: For a greenfield fiber build, we will look at key factors, such as underlying demand density, existing broadband quality in the area, and the permitting process specific to that area. When planning our network as a whole, we target unserved and underserved markets, often in suburban areas near larger cities. Data has driven all our decisions here. We use our patented, proprietary machine learning platform that allows us to dynamically select build areas and adapt to market and competitive pressure in real time.

ISE: You spent most of your telecommunications career in South Africa before founding Ripple. How has that experience influenced your approach to deployment in the United States?

Wilson: In South Africa, we are very used to solving problems ourselves. Nobody else is going to step in, so we have a very much get-it-done attitude. We see paths where others see blockades, and this has manifested in the teams that we build and how we coach and motivate our teams.

ISE: Ripple acquired CloudWyze's fiber assets and customers; acquired BridgeNET's assets, employed its team and named BridgeNET founder Taylor Brown managing director of its Statesville network; and merged with HyperFiber after the companies had already been operating together. What are the most important operational lessons Ripple learned from these different structures?

Wilson: Every deal comes with its own nuances and lessons. It's essential to match the approach to how much operating

knowledge is walking in the door with the deal. You've got to be quick to identify key players that can help lead the initiatives that make or break the deal's success, and quick to understand the capacity your new structure has or is lacking. Then adjust accordingly. One huge learning is that you should integrate the teams as quickly as possible. We also learned how to strategically fold new customer bases into our existing operation, ensuring those customers don't feel the transition themselves.

ISE: When bringing another network operation into Ripple, what are the most important technical areas to evaluate and standardize? How do plant records, network architecture, equipment and unfinished construction affect those decisions?

Wilson: We have focused on only purchasing clean fiber networks, i.e., no wireless or copper/cable. A simple product catalog, and one that is well-priced, is important. If you need to increase pricing to match your own product catalog, that is a red flag, as you will have attrition in subscribers. The OEM that has been used is an important consideration. Going in and replacing the OEM is very expensive and disruptive. The network must have been built well to ensure that the quality of service to subscribers will be good, and the network will not spiral your maintenance costs.

ISE: What are Ripple's top operational priorities during the first 100 or so days of an integration? How do you sequence customer systems, network systems and field operations to minimize disruption?

Wilson: The first 100 days are crucial and demanding. Data syncing starts early. We need accurate build records and customer data. At the same time, we're aligning, planning and engineering, comparing the acquired network's architecture and process standards to ours. This gives us an understanding of what needs adjusting and what can remain as is, which results in best practices and realistic expectations, market by market. We're also meeting with local officials to ensure they know who we are and our plans for their community, while integrating into the market to understand residents' needs. This is all while maintaining communication with employees, vendors, and customers. People need to know what's changing and when, and clear, consistent communication can shape whether an integration is smooth or disruptive.

ISE: Which operating measures provide the clearest picture of whether an integration has succeeded? What have those measures taught you?

Wilson: Churn and customer growth are two key metrics we analyze to measure how seamless the transition is, from a customer perspective. That goes for existing subscribers and those transitioning over to our network, as it's imperative to not shift all attention over to the integration. Our teams must adapt to maintaining a high level of customer care across the board.

ISE: Ripple's growth has created a workforce spread across multiple states and brought established teams into the



Ripple Fiber

Ripple Fiber construction crew.

company through transactions. What strategies do you use to build a common culture without losing local knowledge?

Wilson: While every market may not have an identical team structure, we are intentional when selecting local leadership and supporting roles to ensure the market is served with both industry expertise and local knowledge. Whether we're hiring additional talent or introducing company standards to acquired team members, we must provide detailed onboarding and promote cultural integration. One of the things that has worked well for us is an all-hands town hall where anyone can ask a question. This approach gives those employees confidence in our processes and helps them feel welcomed by existing team members. The culture itself gets built through transparent communication, employee empowerment, and a shared mission, vision, and values.

ISE: What is the most important operating or leadership lesson you have learned over the past year?

Wilson: You can't hand off decision making and responsibility quickly enough to your leadership team.

ISE: What is your favorite part of your job, and what is your least favorite?

Wilson: My favorite part of my job is seeing a team come together and collaborate, build friendships and become a very strong unit! My least favorite part of the job is not being able to live up to a commitment I have made.

Greg Wilson, founder and CEO at Ripple Fiber, has over 20 years of telecommunications and business development experience. With an impressive entrepreneurial track record, he can identify business opportunities and validate business models. His ability to solve complex problems and build capable teams ensures his businesses deliver exceptional results. Wilson has built multiple telecom infrastructure and software services companies, most recently establishing Ripple Fiber as an industry-disrupting fiber internet provider. For more information, visit <https://ripplefiber.com> and follow them on LinkedIn: [linkedin.com/company/ripplefiber](https://www.linkedin.com/company/ripplefiber).

When Networks Need To Go Further, We Help You Build Smarter



As broadband expansion, fiber deployment, and network modernization continue to accelerate, providers and installers need solutions that improve installation efficiency, protect critical assets, meet BABA compliance and support long-term network performance.

Whether you are planning network expansions, tackling deployment challenges, or looking to improve operational efficiency, you can count on Oldcastle Infrastructure for the solutions you need, when you need them.



Duralite® Composite Underground Enclosures

Tier 15 and 22 rated, Duralite allows for lighter lifts, safer installs, and faster field modifications, without compromising strength, safety, or specification requirements.



Carson® HDPE Enclosures

Made of structural foam high-density polyethylene with UV inhibitors, Carson is designed to provide a lifetime of consistent performance in a variety of weather conditions.



Primex® Fiber Management and Broadband Solutions

Providing reliable, flexible, and future-proof connectivity, our Primex solutions are designed for residential and multi-tenant network deployments that support service providers, installers, and builders across North America.

Explore our Communications Infrastructure Solutions



Safeguarding Outside Plant (OSP) Infrastructure with Sensing Cables

Turn the fiber in your outside plant into an early-warning system that helps detect and locate physical events before they impact service.

BY ROBERT PAUL

For decades, fiber optic cables in the outside plant have had one job: to carry traffic quickly and reliably. Fiber has been a transmission medium, not a source of information about what's happening around it. As a result, protecting fiber infrastructure previously required separate monitoring systems, which were typically deemed too expensive or used ineffectively.

The Common Ground Alliance's most recent DIRT Annual Report¹ showed more than 250,000 instances of damage to infrastructure in the field, with roughly a third of reports coming from telecom. Locator errors, excavator failures, and simply not calling for a locate request were the most common culprits. Whatever the cause, ISPs and telecom contractors know that fixing cut fiber lines is costly from a materials and labor standpoint.

Distributed Fiber Optic Sensing (DFOS) changes that. By connecting an interrogator to a fiber and analyzing the signals that the sensing cables send back, operators can use fiber they already have—or fiber they're about to install—to detect physical events and changing conditions along the route.

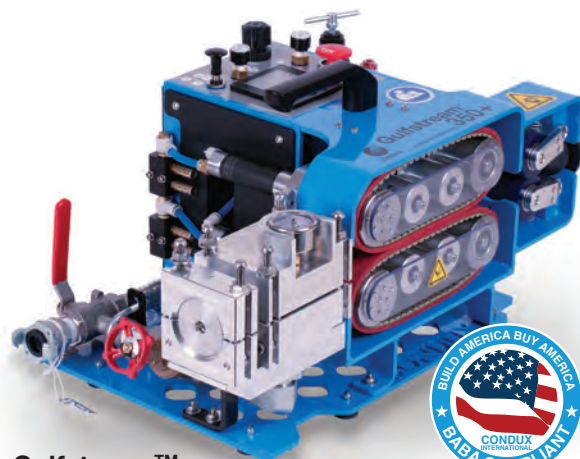
The industry's growing interest in DFOS is tied to a broader shift in how OSP networks are built. Providers continue to deploy more and more assets outside traditional central offices and staffed facilities. Think: wireless and small cell sites, edge compute and data center interconnects, utility corridors, transportation infrastructure, and smart city deployments.



285170952 © Ilja Enger Tszikov | Dreamstime.com



The Next Generation of Fiber Blowers is Already on the Job.



**Gulfstream™
350+**

Now, you can install fiber faster, safer, and farther than you ever thought possible! Driven entirely by compressed air with no hydraulics, this next-gen blower is already proving itself in residential, commercial and data center applications.

**MINNESOTA
MADE**



◀ Scan to Explore
the 350+ in 360°

CONDUX.COM | 800-533-2077

**THE TRUSTED SOURCE
IN THE INDUSTRY**

This telecom network infrastructure often sits in remote locations, making it harder to monitor with people. And installing cameras or standalone sensors at every site can grow very expensive, very fast.

A sensing-enabled fiber route offers a way to provide visibility without building a parallel network of separate monitoring hardware. Better still, this enhanced visibility comes from a technology that's already used in these applications: fiber optics.

What DFOS Detects

DFOS systems generally fall into three categories based on the physical change they monitor:

- **Acoustic sensing** detects vibration and sound energy coupled into the fiber. It's the category most associated with digging or excavation near a route, vehicle activity, equipment vibration, and intrusion or other disturbances near a site.
- **Temperature sensing** tracks heat changes along the length of the cable. That can be useful for outside plant infrastructure, but it's even more relevant in central office or data center applications where temperature shifts serve as early indicators of developing problems.
- **Strain sensing** picks up stretching, compression, or movement in the fiber or the structure it's attached to. This ability is most beneficial along utility lines, bridges, pipelines, or other assets where physical stress matters.

Standard fiber can perform acoustic sensing to a certain extent, but purpose-built sensing cables are engineered to improve sensitivity to specific physical changes such as acoustic activity, temperature, or strain. The interrogator pulses the fiber with light and analyzes the returned backscatter to identify those changes along the route. What an operator can sense, and how well, depends on the overall sensing solution.

Fitting Into Existing Infrastructure

Beyond what DFOS detects, a key question for outside plant professionals is where the equipment lives. Fortunately, adding sensing capability doesn't necessarily mean a new enclosure or power drop.

DFOS systems have three basic pieces: the interrogator, the fiber being monitored, and the software or analytics layer that turns raw data into usable events. The interrogator requires power, environmental protection, and connectivity just like other active electronics. Here, active cabinets deployed across most outside plant networks offer a natural fit to accommodate an interrogator.

Active cabinets are frequently sized with additional rack space for future growth. So, in many deployments, the new equipment could occupy rack units that are already built, powered, and sitting empty inside installed, permitted cabinets. That's a lower bar to clear than setting up new monitoring infrastructure from scratch. It's also why engineers evaluate DFOS less like a new build and more like an extension of existing equipment.

Vendors with deep outside plant expertise have an edge when it comes to DFOS. Clearfield, for example, has engineered its DFOS sensing cables² to feed directly into its existing active cabinets, central office infrastructure, and NOVA™ high-density

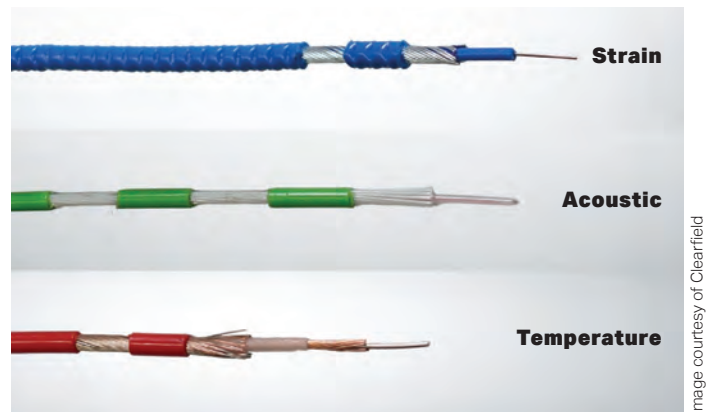


Image courtesy of Clearfield

DFOS systems generally fall into the categories of strain, acoustic, and temperature sensing.

fiber management platform. That integrated approach ensures the sensing layer extends the capabilities of any hardware that operators may already have in the field rather than requiring a parallel system.

This is good news for ISPs of all sizes that continue to face a tough labor market. Implementing DFOS can give existing operations teams greater visibility into OSP conditions.

By giving existing operations teams greater visibility into OSP conditions, DFOS can help crews identify and address issues more efficiently—maximizing the productivity of the workforce they already have and reducing the need to rely on additional field personnel.

Brownfield and Greenfield Differences

How a DFOS deployment is built out tends to depend on whether the fiber is already in place.

In brownfield situations, many operators already have dark fiber or unused strands in the ground along strategic routes. Rather than treating that fiber as pure spare capacity, it can potentially be connected to an interrogator and put to work as an acoustic sensing system. Providers can leverage it to map the route, watch for construction or excavation activity nearby, flag physical disturbances, or provide continuous monitoring of critical routes. For many telcos and ISPs, this is the lowest-friction way to begin implementing distributed sensing, since the fiber cost is already sunk. However, to detect more specific acoustic signals, such as leak detection or animal movement, you will need specialized cable.

Greenfield DFOS projects work the other way around. Instead of harnessing existing fiber, the operator decides the sensing needs upfront and designs the network around that requirement. Wireless or tower sites, utility corridors, transportation projects, smart city buildouts, and perimeters around edge or data center sites—every application calls for a different sensing priority. Greenfield designs allow you to choose the cable and interrogator placement to match. A utility route focused on strain has different requirements than a perimeter application built around acoustic detection, and greenfield is where that distinction gets built into the network from the start.

Advantages for Operators

The bigger opportunity with DFOS is to give operators greater visibility into what is happening along their outside plant infrastructure, not just whether the network is carrying traffic.

Without sensing, the typical monitoring and response sequence in the outside plant is reactive. Something happens in the field, service may be affected, an alarm or trouble ticket is generated, and someone has to figure out what happened and where before a crew can be dispatched.

Sensing shifts some of that timeline to enable faster responses. With DFOS, operators can detect and locate physical events along their routes, whether that's digging near a buried cable, unusual movement on a structure, an unexpected temperature swing, etc. They can then address the issue before it turns into a service-affecting failure, or at least dispatch crews faster to limit subscriber outages.

Detection alone isn't the only value. The value also comes from what the service provider's team can do with that detection: whether the system can associate an event with a location, classify the likely event type, and assign a risk level before it ever reaches a human. Some large operators evaluating this technology have described exactly that kind of requirement:

- High-resolution localization across long stretches of route.
- The ability to work across both dark and in-service fiber without disrupting live traffic.
- Event data that arrives already triaged by risk so field teams know what they're walking into.

This is a meaningful shift from a trouble ticket that simply says something is wrong somewhere on a route. An operations team working from a located, classified, risk-scored event has real information to act upon before a technician is ever sent to the field.

Before Deploying DFOS

Because DFOS sits at the intersection of fiber, cable design, and active equipment, operators should consider and work through a few practical questions upfront:

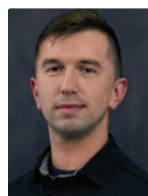
- What is being detected? Is it acoustic activity, temperature, strain, or some combination?
- What level of location accuracy is required, and over what distance?
- Will the deployment use dark fiber, active, in-service fiber, or dedicated sensing fiber?
- Does the application call for a specialized sensing cable, or will standard fiber be adequate?
- Does the necessary equipment fit into existing rack space and cabinets already in the field, or does it require a new enclosure and site build?
- How will events be classified, and how will alerts reach the operations team that needs them?
- Who is helping to design the complete system—fiber, cable, enclosure, and analytics—rather than just supplying the sensing hardware?

That last question may matter most. DFOS is more than a software or analytics layer bolted onto existing fiber. It's a comprehensive system that relies on getting the physical layer right. This is why it functions best as an extension of the same outside plant expertise that already goes into fiber selection, cable design, cabinet protection, and power planning.

Companies with a proven track record of outside plant excellence can apply their expertise to distributed fiber optic sensing, engineering cables, and interrogator integration. As a result, these operators can deploy DFOS as an extension of infrastructure they already have in the field, rather than a parallel build from scratch. ■

REFERENCES

1. Dirt Annual Report, dirt.commongroundalliance.com/2025-DIRT-Data-Summary-Trends/2025-At-A-Glance#mainContentAnchor
2. DFOS Sensing Cables, seeclearfield.com/cables-drop-assemblies/sensing-cables.html



Robert Paul is a Market Development Manager at Clearfield. For additional information, visit Clearfield's site at SeeClearfield.com. Follow them on LinkedIn: [linkedin.com/company/clearfield](https://www.linkedin.com/company/clearfield) and Facebook: <https://www.facebook.com/clearfieldinc/#>.



**109 Independence Way
Coatesville, PA 19320**
graphics@uticom.net • www.uticom.net
610-857-2655 • Fax: 610-857-2986

Graphics for Harsh Environments™

CAUTION
FIBER OPTIC CABLE

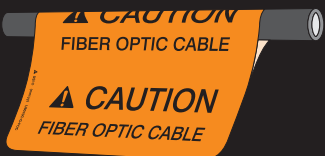
CAUTION
FIBER OPTIC CABLE

CAUTION
FIBER OPTIC CABLE

Application Option: Wrap



Application Option: Flag



WRAP AROUND CABLE MARKER

- Long term cable markers.
- Self-cleaning, 15 year exterior durability.
- High visibility.
- Reflective for all lighting levels.
- Non-PVC Material.
- Chemical, water, abrasion resistant.
- Rear adhesive allows wrap or flag application.



The 2026 ISE Network Innovators' Awards

ISE Magazine proudly announces the award-winning honorees of the 2026 ISE Network Innovators' Awards program.



BY LISA WEIMER

Eleven companies were presented with a 2026 ISE Network Innovators' Award at this year's ISE EXPO, which took place August 18-20 in Nashville, Tennessee.

An independent panel of judges evaluated each submission based on its originality, innovation, how well it addresses a new or existing requirement, novelty of approach, cost-effectiveness, and positive customer impact—how well the product/service/system helps customers meet their objectives, reduce operational expenses, and/or develop new revenue sources.

We are proud to share with you the following award-winning products and innovations from AFL, C&D Technologies, Clearfield, CommScope, Corning, Cyber Power Systems, HFCL, Jameson Tools, PPC Broadband, SOLiD, and VETRO.



HFCL's 3456F IBR Microcable (200µm)

HFCL's 3456F IBR Microcable (200µm) transforms the economics of ultra-high-capacity fiber deployment by combining speed, scalability, and sustainability. Designed for hyperscale connectivity, long-haul, metro, and data center interconnect (DCI) networks, it enables operators to deploy extremely high fiber counts within constrained duct infrastructure while significantly reducing installation time and operational costs. It enables mass fusion splicing, reducing installation time by up to 83% compared to loose



fiber splicing, and is engineered to be jetted into 1-inch ducts, ensuring optimal installation performance for ultra-high-capacity backbone networks. hfcl.com

JUDGE COMMENT: "With the 3456F IBR Microcable, HFCL has merged multiple innovations into a single product. From easing installation and termination practices to enabling deployment through smaller pathways, the cable epitomizes product optimization."



CyberPower OL1K5RTHD Smart App Online Switched UPS

Cyber Power System's OL1K5RTHD Smart App Online UPS systems feature double-conversion topology for seamless power protection for core networking equipment, corporate and enterprise servers, storage systems, and VoIP infrastructure. The UPS is equipped with eight battery and surge-protected outlets, each with individual control, allowing users to program, schedule, or remotely control outlets to supply power to different devices. Critical and non-critical load outlets maximize the output of the UPS by scheduling non-critical loads to shut off, allowing additional runtime for critical load outlets. cyberpowersystems.com



JUDGE COMMENT: "This right-sized UPS is reflective of CyberPower's portfolio that matches the product's capabilities with the application's requirements. The combination of scalability and ease-of-management ensures a clean, reliable power supply for critical equipment."

VETRO Vision

VETRO Vision is a computer vision-driven intelligence layer that continuously reconciles field reality with the network system of record. Vision observes field activity in real time to identify assets, environmental conditions, and workflow states. These are trans-



formed into structured network intelligence—including asset type, placement, attributes, connection state, and physical condition—along with spatial context, time stamps, confidence scoring, and exception detection when observed reality diverges from design intent or expected topology. vetrofibermap.com

JUDGE COMMENT: "VETRO's FiberMap is a proven business- and project-management tool for principals in the broadband industry. VETRO Vision adds an additional layer of data, knowledge, and capability throughout the life cycle of a fiber-optic network."

CyberPower PDU41001G Gigabit Switched PDU

Cyber Power System's PDU41001G Gigabit Switched ATS Power Distribution Unit (PDU) is designed to ensure the uninterrupted operation of critical equipment when paired with a UPS. It delivers power redundancy for single-corded devices, making it ideal for



NETWORK
INNOVATORS'
AWARDS

Honoring Pioneers Transforming Telecom & ICT

Groundbreaking solutions, technical excellence, and meaningful industry contributions set the 2026 ISE Network Innovators' Awards honorees apart from the crowd.

We were proud to spotlight their innovation, dedication, and impact—and to celebrate the achievements that are driving progress at ISE EXPO in Nashville.

Congratulations to AFL for their dedication!





data centers and network closets where uptime is non-negotiable. The unit continuously monitors both power sources and automatically switches from the primary to the secondary source if the voltage exceeds the defined thresholds or if a power failure occurs. Once incoming power stabilizes, the PDU seamlessly switches back—ensuring continuous operation without manual intervention. cyberpowersystems.com

JUDGE COMMENT: "In applications where the tolerance for downtime is zero and redundancy is table stakes, the PDU41001G Gigabit Switched PDU delivers essential backup. Network managers' ability to monitor the device remotely is fitting for such an indispensable network element."



C&D's MSE Pure Lead Technology

C&D Technologies used proprietary design advances to develop MSE Pure Lead technology, a cost-effective large format VRLA solution for high-temperature applications, such as outdoor wireless cabinets in hot climates, as well as in controlled settings like optical regeneration sites. Integrating C&D's VRLA batteries in telecommunications backup systems can reduce costly cooling equipment and help lower operating costs. C&D's portfolio of batteries



provides the performance, reliability, and lower total cost of ownership necessary to meet the needs of a market evolving due to the surge in AI and edge computing. cdtechno.com

JUDGE COMMENT: "The technology is an example of the scientific innovation that keeps users worldwide connected without having to think about it. C&D's research-and-development efforts result in longer battery life, and the resilience to continue operating in extreme temperatures."

Clearfield's NOVA™ Platform

Clearfield's NOVA Platform provides a modular, high-density fiber ecosystem that simplifies how modern networks are built and scaled. This comprehensive platform empowers professionals in today's broadband central offices, hyperscale and colocation data centers, and edge applications to meet their growth and performance objectives. As operators face exponential fiber growth driven by AI workloads, cloud expansion, and edge computing, NOVA enables



support for rising 100G/400G demands without overhauling existing infrastructure. The platform reduces operational expenses through toolless installation, front-of-rack access for moves/adds/changes, integrated documentation, and consistent design across panels, cassettes, racks, and cabinets. seecclearfield.com

JUDGE COMMENT: "Solid product and attempt to create a solution (family of) components for data centers and central offices. Very innovative product that will help with various deployments."

CommScope's FOSC® Closure Premium Baskets

CommScope's new FOSC Premium Basket provides additional flexibility for managing evolving network requirements. It offers up to 30% more storage capacity, along with adjustable height settings that allow configurations to be adapted on-site without



replacing components. Designed to support efficient field work, the basket includes features for simplified installation, secure cable management, and emergency splicing. Streamlined ordering and inventory processes also help reduce operational complexity and time spent managing materials. Together, these features provide a flexible approach to increasing capacity while supporting reliable, efficient network maintenance and expansion. [commscope.com](https://www.commscope.com)

JUDGE COMMENT: "The FOSC family of closures have been in the market for decades with an excellent reputation. Expanding the line with the additional capacity and features for slack storage etc. is a great design next step."

Corning's Evolv® FRECAP® Dome Closure

The Evolv FRECAP closure is Corning's NAFTA-specific gel sealed, dome-based fiber optic closure designed to reduce installation risk and reentry time for broadband service providers,



housing fiber splices and optical devices for outside plant environments. The closure features eight independently sealed gel cable entry segments with an intuitive lever-based sealing mechanism, enabling cable adds or changes without disturbing existing sealed ports. An integrated gel dome seal eliminates separate O-ring handling, while industry standard tray compatibility supports scalable, high density splicing in outside plant networks. [corning.com](https://www.corning.com)

JUDGE COMMENT: "The closure is clearly the result of an exhaustive examination of the real-world challenges of network expansion. It embodies the security of the installed cable plant while simultaneously providing a physical platform for growth."

Jameson's Fiber Driver Air Boost

The Jameson Fiber Driver with Air Boost add-on is a compact, air-assisted tool designed for short- to mid-length fiber installations (FTTx Drops and Riser Cables). It uses compressed air to reduce friction between the fiber and conduit interior while providing additional forward force. This reduces the effort required to push fiber through conduit and can help operators navigate runs with sharper or multiple bends. It also extends the maximum installation distance of the standard Fiber Driver. By reducing the physical effort required, it can help

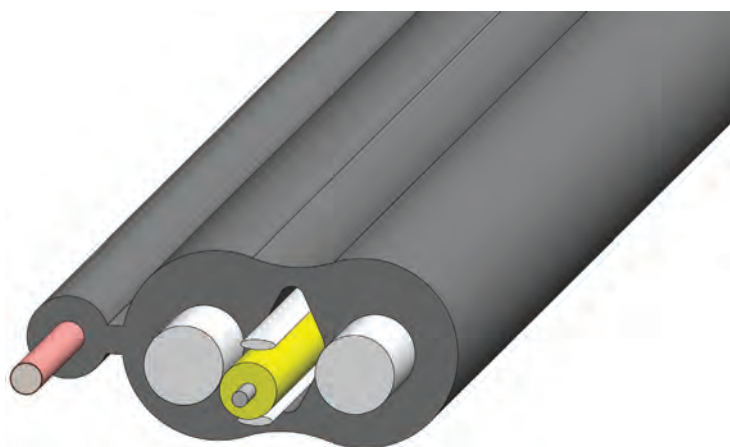


streamline fiber installation and reduce operator fatigue during demanding conduit runs. jamesontools.com

JUDGE COMMENT: "An uncomplicated tool that requires a modest investment, and delivers labor-cost savings that amount to many times that initial investment. Its ability to reduce worker fatigue is a welcome attribute for a business owner and any fiber-installation crew."

PPC Broadband's DiamonDrop™

PPC Broadband's DiamonDrop is an innovative, self-supporting aerial and underground single-fiber drop cable engineered to simplify field termination and eliminate fiber damage during installation preparation. Featuring a proprietary core design, the



cable allows its durable polyethylene jacket to split and peel away cleanly without the use of any specialized or proprietary tools. It provides Broadband Service Providers with three operational benefits: it dramatically accelerates installation velocity per premise, significantly reduces material waste from broken fibers, and eliminates technician retraining by remaining completely compatible with existing third-party connectors and hanging hardware. ppc-online.com

JUDGE COMMENT: "DiamonDrop is a smart answer to fiber damage during drop cable prep in the field. Working with standard tools and existing connectors, plus BABA compliance, make it a good choice for projects using federal broadband funding."

SOLiD BARS™

The SOLiD BARS solution quickly and cost-efficiently delivers scalable, enterprise-grade cellular coverage for small- to mid-sized buildings ranging from approximately 40,000-250,000 square feet. This innovative distributed antenna system (DAS) solution addresses a critical need for digital communications in small- to mid-sized "Middleprise" buildings, reducing the cost and complexity of 4G and 5G mobile connectivity and supporting all three major U.S. carriers: AT&T, T-Mobile, and Verizon. It simplifies the



delivery of enterprise-grade connectivity over quick, easy-to-install Ethernet infrastructure to small, aesthetically pleasing remote units installed throughout the building. solid.com



JUDGE COMMENT: "SOLiD BARS is a great option for improving weak indoor service in mid-sized buildings. Supporting all three major carriers from a single system is a practical advantage for this market."



AFL's Fujikura 100S Core Alignment Splicer

Built for the demands of modern fiber installation, AFL's Fujikura 100S Fusion Splicer combines intelligent automation with user-first design to streamline daily splicing tasks. From faster fiber preparation and alignment to smart adjustments that eliminate manual guesswork, the 100S helps technicians work more efficiently and with greater confidence. Its customizable interface adapts to the user, not the other way around, while robust engineering ensures consistent, high-quality splices in any environment. The 100S is



designed to save time (reducing total splice time by 30%), reduce errors, and support peak performance in the field. aflglobal.com

JUDGE COMMENT: "AFL/Fujikura Splicers have been leading the industry for a decade, and I like how they integrate new technology to improve the ease of use and reliability of the splice for both experienced and new field installers." ■

ADVERTISER INDEX

Advertiser	PG
AFL	25
Clearfield	36
Condux	19
Craftmark	29
ISE EXPO 2027	35
Oldcastle Infrastructure	17
Tii Technologies, Inc.	2
US Conec	13
Uticom Systems, Inc.	21

The index of advertisers is published as a service, and the publisher does not assume any liability for errors or omissions.

CraftMark™ SpecMark™ Ultra-Snap™

CraftMark™ —The Snap On Marker Experts—have developed the SpecMark™ Ultra-Snap™ for long term (8-10 years) cable identification applications. The Ultra-Snap™ features a crystal-clear UV inhibiting over-lamination that sheds destructive UV rays as

well as providing added abrasion resistance. These markers have been tested side by side with competitor's products in our in-house accelerated UV weatherometer test lab. After the equivalent of 4 years of outdoor weathering, the competitor sample was completely faded while the Ultra-Snap™ retained its brilliant color. Available in your choice of colors, logo & text.



CraftMark

Tel: 800.627.5255

www.craftmarkid.com | glen@craftmarkid.com

ISE EXPO 2026 IN REVIEW

Power, AI, workforce and network convergence shaped the conference program in Nashville.

ISE EXPO 2026 brought the broadband and telecom infrastructure community to Music City Center in Nashville, Tennessee, August 18-20, for three days of conference programming, hands-on learning and time on the exhibit floor. Networking continued outside the conference rooms with the Taste of Tennessee opening reception and a Topgolf outing.

Panels and sessions throughout the week examined key industry priorities like power delivery, AI, network convergence and outside plant engineering. Power-focused programming addressed electrical protection and reliability for Class 4 fault-managed power systems, as well as rising electricity demand from AI data centers. Other sessions considered campus Power over Ethernet applications and the relationship between fiber density and power demand at edge data centers.

AI programming ranged from the groundwork required before autonomous networks to practical deployment challenges. Sessions covered AI-driven RAN operations and next-generation fiber network readiness. The program also addressed automated digital twins and moving AI projects beyond the pilot stage. Site-selection programming connected AI infrastructure development with power availability and fiber density.

Workforce remained a recurring concern across the program. Sessions examined cross-training between engineering and construction teams and inconsistent field methods that can affect cable installation productivity. Operators also



Women in Telecom Breakfast & Panel Discussion moderated by (left to right) Janice Oliva, EndeavorB2B, and panelists Ali Alexander Phillips, Arriva; Lauren Sanders, BBT; Marge Jackson, Brightspeed; Sarah Le Blanc, Clark Growth Partners.

Innovators'
awards
presentation.





Opening Keynote panelists (left to right): Ashley Church, G Fiber; TJ Plumley, United Fiber; Kristina Harrison, Brightspeed; David Stehlin, TIA.



Closing Keynote panelists (left to right): Shirley Bloomfield, ShirleyConnected LLC; Bo Gresham, Dycom Industries; Michael Hamilton, C Spire.



shared a decade of fiber broadband learning through a session covering workforce models and truck roll reduction. The Women in Telecom breakfast and panel returned with participants from Arriva, BBT, Brightspeed and Clark Growth Partners.

Elsewhere, the conference program covered hybrid network planning and supply chain coordination, along with Zero Trust security and the long-term sustainability of BEAD-funded networks. Additional sessions addressed convergence at the executive level and 5G economics. Technology-neutral outside plant engineering, ribbon splicing, leadership and organizational change also appeared on the program.

For coverage of the opening and closing keynotes, turn to this issue's cover story (page 8).

From the exhibit floor to after-hours conversations, ISE EXPO 2026 brought the industry's current engineering and operational questions into one program, with power, AI, workforce and convergence running through much of the week.

Save the date for ISE EXPO 2027 taking place August 24-26, 2027, in Fort Worth, Texas. ■



ISE EXPO Executive Panel Discussion with (left to right) Charles Harlow, Vitruvi Software; Cheri Beranek, Clearfield; Steve Harris, UCL Swift; Craig Hugueley, AMT; Will Miller, AFL.

Coordination Isn't Integration

ISE research suggests network silos are weakening. The harder task is extending integrated planning through construction, operations and the network's eventual expansion.

BY HAYDEN BEESON

Ahead of ISE EXPO 2026, ISE surveyed 80 communications infrastructure professionals about infrastructure priorities, deployment barriers, and planning across fiber, wireless, broadband, and data center networks. Among respondents, 44% said their organizations use a single integrated planning process, while another 31% said separate teams coordinate regularly. 19% said they deploy only one network type, and 6% reported independent planning with little coordination.

Those answers suggest considerable coordination among this group of respondents. They do not, however, show which functions participate in planning or whether that collaboration continues as a project moves from design to construction and operations. (See Figure 1.)

That distinction shaped the discussion when the findings were presented during

the “No More Silos: Building Hybrid Networks That Actually Work” session at ISE EXPO 2026. Panelists Kevin Czaicki, Vice President of Engineering and Strategic Solutions at Millennium, and Noah Taylor, Head of Market Intelligence and Growth Strategy for Broadband at AFL, described organizations that communicate successfully during design and construction but lose that integration as the network moves toward operation.

An organization can coordinate fiber and wireless planning, align procurement with construction, and still leave the completed network to an operations team that had little influence over its architecture, components, or long-term maintenance requirements.

The panel focused on whether and how coordination survives each project handoff.

Following the Network Through the Handoff

Czaicki described projects that begin with broad stakeholder participation but narrow once detailed design starts. At that stage, engineering may work primarily with whoever is responsible for the network design. Operations may not reenter the process until materials are being positioned, even though its personnel will ultimately own the finished infrastructure.

That handoff becomes more difficult when employees leave or move into other roles. Taylor described customers who inherited networks without knowing why particular designs or components had been selected. He recommended leaving a record of the reasoning behind those decisions so future employees do not have to reconstruct it during maintenance or replacement work.

Both speakers argued that operations should be involved earlier. Czaicki added that finance should participate early enough to distinguish an upfront saving from a decision



223866196 © Pop Nukoonrat | Dreamstime.com

that shifts costs into maintenance, repair, or future expansion.

Manufacturers represent another frequently overlooked part of the process. Taylor urged operators to discuss the problem they are trying to solve with manufacturers rather than sending only a bill of materials. An earlier conversation may give a manufacturer an opportunity to suggest a different product, installation method or design approach, including products still in development.

Taylor also connected early manufacturer involvement to demand forecasting. He said long lead times for adding new fiber-production capacity make it important for manufacturers to understand anticipated project requirements before orders are placed. Forecasting, procurement, and network design must then remain coordinated as routes, schedules, and material needs change.

For the panelists, the issue was continuity between design, procurement, construction, and operations. Each function performs different work, but decisions made by one group can determine the costs and constraints inherited by the next.

Planning for Several Futures

The survey findings show why that broader view has become necessary. When respondents were asked to select their highest infrastructure priority for the next 24 months, no single initiative emerged as the clear leader. Expanding fiber capacity, modernizing existing networks, supporting AI infrastructure, and improving network resiliency each received 19% of responses. Accelerating broadband deployment followed at 12%, while wireless and fiber integration and reducing deployment costs each received 6%.

Investment expectations add another layer of complications. Half of respondents selected data center connectivity as the infrastructure segment likely to receive the greatest investment increase over the next three years. Outside-plant fiber and wireless or fixed wireless access followed at 19% each.

Respondents were more divided about AI's current influence on network planning. 25% said AI is becoming an important planning consideration, 25% said their organizations are evaluating future requirements, and 25% reported little impact so far. 13% identified AI as a primary investment driver, while 12% were unsure.

Taylor said much of today's AI-related network activity is concentrated around data center interconnection and model training. He and Czaicki expect wider use of inference to push demand into other portions of the network and create less predictable traffic patterns.

The panelists' design advice was to preserve capacity and physical space where future growth is plausible. For fiber projects, that may include additional fiber count, conduit space, expansion routes, and locations for future cabinets or facilities.

Taylor noted that the field labor required to place a 144-count cable is similar to the labor required for a 432-count cable. Czaicki added that, in his experience, returning years later to expand a route can cost two or three times as much once permitting, construction, and road closures are required again. Project economics will vary, but their recommendation was to consider expansion options before crews leave the field.

Higher density also introduces trade-offs, though. Taylor said ribbon fiber and ribbon splicing can accelerate construction at higher fiber counts, but concentrating more fibers in one cable increases the consequences of an outage: A single misplaced backhoe strike, for example, could affect substantially more capacity.

Czaicki also connected standardization to both successful construction and operations. Consistent engineering practices, materials, and network designs make it easier

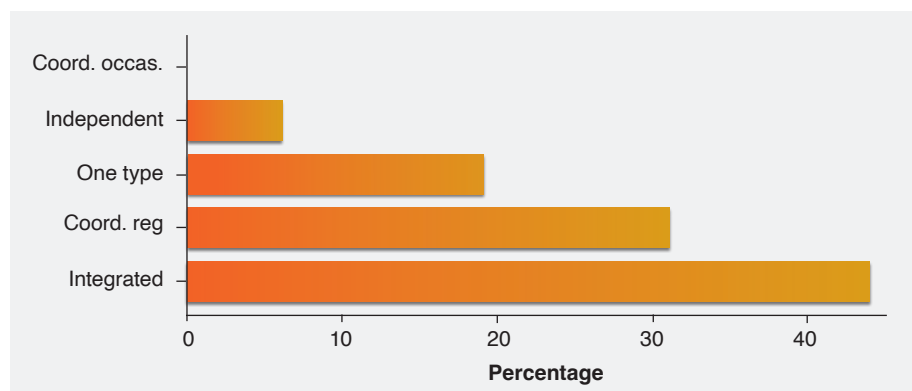


FIGURE 1. Planning Across Infrastructure Segments: Three-quarters of respondents report either integrated planning or regular coordination across infrastructure teams.

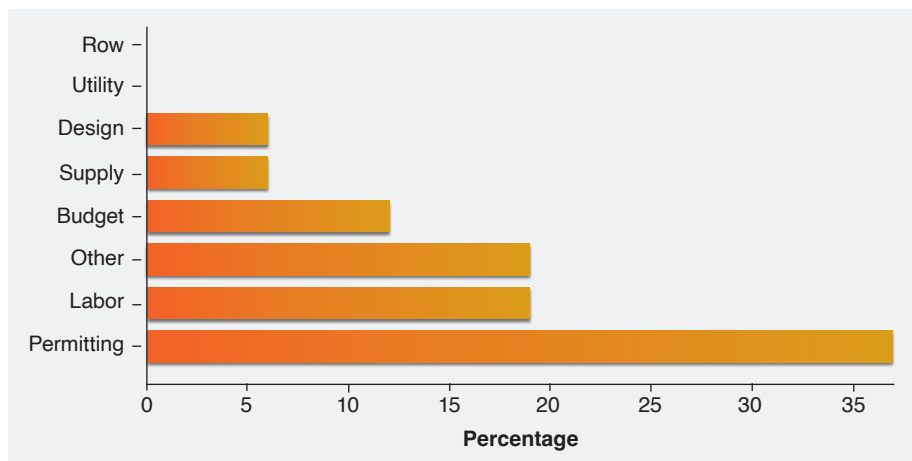


FIGURE 2. Biggest Deployment Obstacle: Permitting and regulatory approvals emerged as the leading barrier to faster network deployment.

for employees to understand what they will encounter in the field. Service vehicles can also carry inventory that applies across more of the network. Standardization does not prevent operators from adopting improved products, he said, but it provides a common foundation for smaller changes.

As for the labor problem, Taylor proposed a two-part solution: making work easier for available employees and eliminating some field labor altogether. Products that are easier to install and train on may improve field productivity, while pre-terminated and plug-and-play solutions can move portions of the work into a controlled factory environment.

Permitting and regulatory approvals were the most frequently cited deployment obstacle, selected by 37% of respondents. Labor availability and “other” obstacles each received 19%, followed by budget limitations at 12%. Material or supply chain constraints and network design complexity each received 6%. (See Figure 2.)

Czaicki recommended dividing large deployments into constructible segments and sequencing work according to permit lead times, material availability, weather, and construction difficulty. He argued that this approach can reduce the risk of a single pending approval stalling the entire program. Taylor added that manufacturers may be able to suggest a product or construction method suited to a particular permitting constraint, while route

diversity can support both the project schedule and network resiliency.

Integration After Construction

When respondents were asked to identify integration’s greatest expected benefit, faster deployment and greater capacity or

operators face pressure to control ongoing network costs even when initial construction is treated as an investment.

Taylor recommended continuing to measure integration after commissioning. If coordination and standardization improved construction speed, operators should examine whether those benefits carried into operations. Metrics such as mean time to repair can indicate whether technicians understand the network, have access to the correct information, and can obtain the materials needed to restore service.

Czaicki said customer experience provides another measure. He mentioned latency as one factor customers may notice even when competing providers offer similar advertised speeds.

The survey shows that many respondents describe their planning as integrated or regularly coordinated. The panel discussion raised a more specific question: whether that coordination is still present when designs change, materials

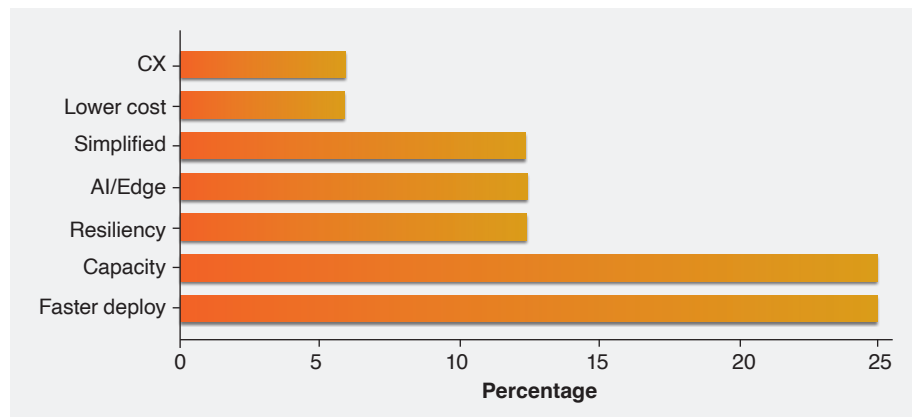


FIGURE 3. Benefits of Network Integration: Respondents identified faster deployment and greater capacity or scalability as integration’s greatest expected benefits.

scalability, each received 25%. Improved resiliency, better support for AI and edge applications, and simplified operations each received 12.5%. Lower operating costs and improved customer experience each received 6%. (See Figure 3.)

The low ranking of operating costs surprised both Taylor and Czaicki, the latter speculating that some respondents may be closer to network construction than long-term operation. In his experience,

are ordered, and operations takes responsibility for the completed network.

The panelists’ examples centered on what happens after construction, whether operations understand the design, whether technicians have familiar materials on the truck and whether future employees know why earlier decisions were made. Those outcomes show whether an integrated plan survived the handoff to the operating network. ■

ISE EXPO

ICT SOLUTIONS & EDUCATION

★ DEEP IN ★ *the heart of* CONNECTIVITY

Save the Date
AUGUST 24-26, 2027
Fort Worth, TX

FORT WORTH
CONVENTION CENTER

LEARN MORE



iseexpo.com

Owned & Produced by:

ENDEAVORB2B®

Presented by:

ISE ICT SOLUTIONS
& EDUCATION

Enabling the Lifestyle of

Better Broadband... And Beyond

YOURx® Multi-Purpose Terminal

Deploy Anywhere. Configure Everything.

Maximize network flexibility and reliability with the YOURx Multi-Purpose Terminal. A sealed, mid-span design supports rapid deployment, simplified access, and long-term performance across a wide range of fiber network applications.

- IP68 & Telcordia-certified environmental protection
- Supports splicing, plug-and-play & optical components
- Pole, aerial, above-grade or below-grade deployment



Scan the QR code to learn how to simplify your deployments.



Technologies that speed your fiber broadband buildout.

Visit us at www.SeeClearfield.com or call 800-422-2537

