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SERVICE PROVIDER GROUP

ISP Starter Kit:
How to Build a Successful Network Infrastructure

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Internet service is now considered critical infrastructure to keep us connected.

The past four years have underscored this fact. From our children needing to connect to e-learning services from home to workers needing to work from home in rural areas, connectivity is more important than ever before.

In fact, recent research shows that rural residents are still less likely to report having broadband at home than those in suburban areas. It's up to internet service providers (ISPs) to provide the network infrastructure required to increase access to reliable, high-quality, and secure internet.

New ISPs are emerging to support the cause, focused on underserved communities. Perhaps you're one of them. If so, we commend you. And we expect that, if you're reading this, you may have already experienced some challenges, as building a network can be complex and costly.

Enter the ISP Starter Kit.

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New ISPs Face

You want to do your part in your rural area to boost connectivity. You may even be a part of a co-op, municipality, utility, or tribe that's driving network development. While you may feel the pressure and want to get up and running quickly, delivering the highest quality internet service requires attention to detail, technical expertise, and a dedication to getting it right from the start.

In the words of Andy Erickson, Senior Director – SP Technology & Engineering at ePlus Service Provider Group (SPG), "Becoming an internet service provider (ISP) is more complicated than slapping together a network and hitting the ON switch." Indeed, becoming an ISP means you'll need to overcome some challenges unique to this industry.

1. Investments in Low-Quality Network Components

A quick search online regarding the startup costs for an ISP will result in varying numbers and statistics. You'll find estimates ranging from hundreds of thousands to millions. The truth is, starting an ISP is a serious investment.

The components you choose matter when it comes to the speed, reliability, and overall quality of your network. Choosing low-quality components early on to try to save on startup costs can have negative consequences.

One of the most common issues resulting from low-quality components is network downtime. In this competitive industry, every outage is a tick mark on your record in the eyes of those you serve. And too many outages may result in your subscribers going elsewhere, directly impacting your bottom line.

Buying value based on your budget will help avoid this risk and provide a return on investment that will allow for future expansion and success.

❷ Difficulty in Understanding Network Architecture

The make-up of the network architecture is critical to the success of any ISP. What's a bike without a chain or a lamp without a bulb? The same goes for a network without the proper design.

A good overall network architecture is larger than the sum of its individual parts. It is a proper combination of elements and process that are brought together to meet challenges and avoid service problems that can result from misconfiguration or lack of planning for growth. With all of the different components involved, however, it can be challenging to understand how all of the puzzle pieces fit together.

ISPs typically need to scale rather quickly. This means you'll need an infrastructure that can not only scale quickly, but also efficiently. The number of subscribers you can serve now should be vastly different from the number you can serve 10 years from now. Scaling effectively, however, requires the right high-quality network components in all the right places.

❸ Subpar Network Security

Cyberattacks are continuously increasing. According to IBM, there was a 71% year-over-year increase in cyberattacks that used stolen or compromised credentials. Why the increase? There are many reasons.

For example, our digital landscape is growing daily as more and more devices and processes are connected to and using our networks. There's the use of cloud, the growth of remote work environments, and a massive increase in sophistication of the attacks. All of these things and more make your network more susceptible to intrusion.

Cyberattacks can cost your ISP. It takes serious resources to locate and mitigate security threats. Cyberattacks can also harm your reputation, especially as a new ISP.

Your network infrastructure and processes must be built using a security-first approach to avoid these negative consequences. This is easier said than done, however. For new ISPs, understanding the proper overall posture required to boost security can be a challenge. After all, security is so much more than firewalls.

What is the
ISP Starter Kit?

To overcome these common challenges, it's critical to build a solid foundation from the start. All too often, emerging ISPs will put all of their focus on getting a network up and running that they fail to consider each component and how it will work together. This can lead to single points of failure (and potential outages) that could be avoided with proper attention to the design upfront.

As a result, many emerging ISPs rely on additional assistance to map the initial network architecture to the provider goals, procure the proper network components, and deliver the network on-time and at, or below budget. This is what the ISP Starter Kit will provide for you.

The ISP Starter Kit: Setting You Up for Network Success

The ISP Starter Kit was developed by ePlus' Service Provider Group as a curated collection of components designed to assist ISPs in building networks that are easily scalable, efficient, reliable, and secure. The goal is to provide the help you need to build a strong foundation that will support continued growth.

Assists in Building a Secure, High-Quality and Compliant Network

The ISP Starter Kit helps you develop a plan based on your current and future goals and design a vendor-agnostic network that fits your plan. With careful consideration of cost, scalability and performance, the starter kit provides all the necessary components of a successful network, from the obvious core routing and PON access components to some of the more hidden elements like the DDI infrastructure which houses the dynamic host configuration protocol (DHCP), domain name system (DNS), and IP address management (IPAM).

The design also also helps to ensure your network complies with regulations, such as the Communications Assistance for Law Enforcement Act (CALEA), and provides critical functions required of all ISPs, such as speed test server capabilities.

The ISP Starter Kit also includes the components required to deliver heightened security and the help you need to configure them. The design will guard against cyberattacks, data loss, and the potential performance impact caused by distributed denial-of-service (DDoS) attacks to increase network security and improve your overall security posture. The ecosystem is composed of multiple vendors to help protect your network from security threats and malicious events. As a result, you're not dependent on one manufacturer and can quickly adapt to the ever-evolving internet landscape.

Security requires more than just hardware and software, however. It requires processes and procedures and strong governance--areas where ePlus excels--and this work can be added to your starter kit if you'd like help building a complete security plan.

Finally, you'll receive the help you need to build a network roadmap for your ISP. This way, you can identify all of the what-ifs involved in networking so you're prepared for any outage or other scenario.
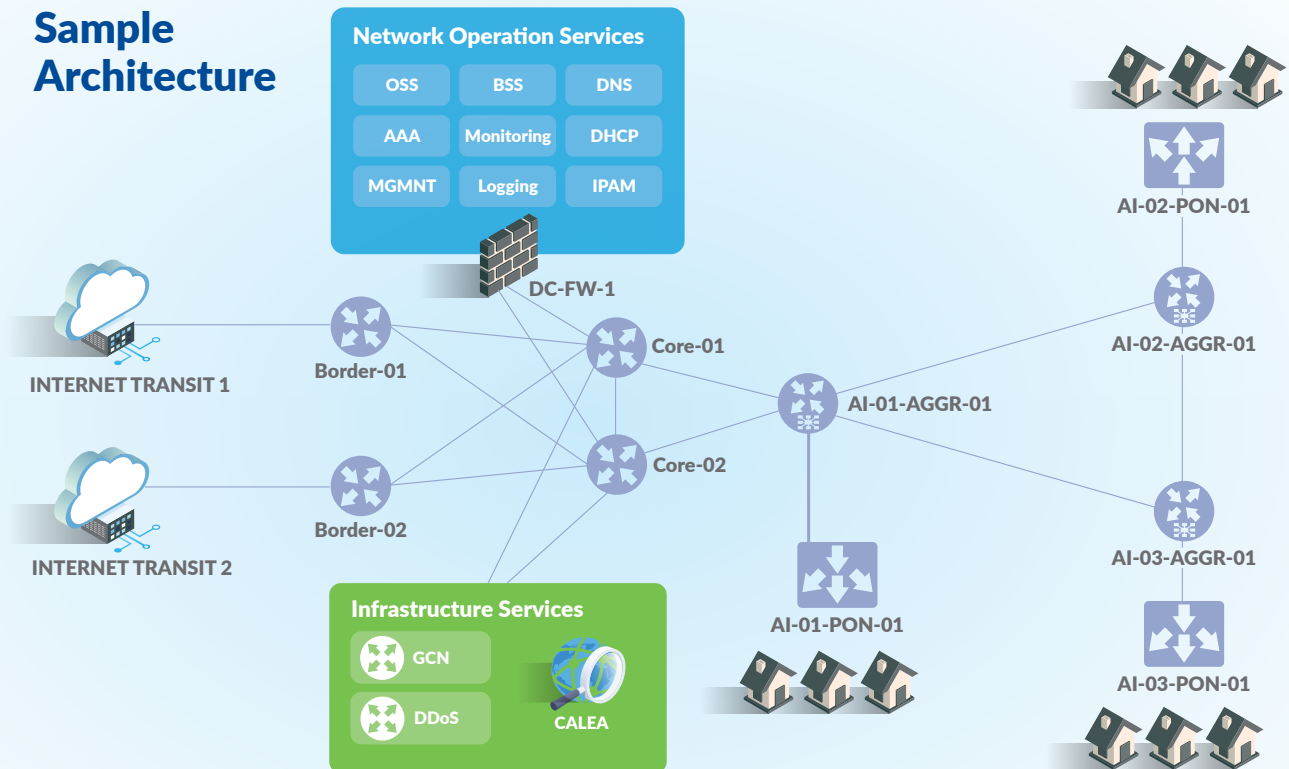
Enables You to Scale Quickly in the Future

The starter kit is meant to be a starting point. As you move through the process, a plan will be put in place to help you develop your future network strategy. Not only will you have everything you need to get started, but you'll also have a growth strategy charted over a set number of years, allowing you to budget and scale.

In addition, the ISP Starter Kit enables you to build a network that can be scaled without sacrifcing speed, reliability, and security. With the starter kit, you're prepared to scale subscriber growth well into the tens of thousands while still providing a high-quality subscriber experience.

Sample Architecture

Network Operation Services

OSS	BSS	DNS
AAA	Monitoring	DHCP
MGMNT	Logging	IPAM

DC-FW-1

INTERNET TRANSIT 1
Border-01
Core-01
Core-02
AI-01-AGGR-01

INTERNET TRANSIT 2
Border-02

Infrastructure Services
GCN
DDoS
CALEA

AI-01-PON-01

AI-02-PON-01
AI-02-AGGR-01
AI-03-AGGR-01
AI-03-PON-01

The Components of the ISP Starter Kit

The ISP Starter Kit offers a wide range of components, depending on your needs. These components can be purchased as a complete kit or a la carté, making them a great fit for brand new ISPs or those ready to scale.

What's included in the ISP Starter Kit? ePlus includes everything you need either to start or to scale your ISP. The starter kit includes the components required to prevent DDoS attacks, monitor network traffic, protect your network, administer the network, develop redundancy, configure your network, and test for optimal performance.

Complete Customization to Fit Your Needs

Perhaps building a complete, complex, fully redundant network isn't affordable for your emerging ISP. Your cash flow may be low or you may be drowning in startup costs. The ISP Starter Kit is meant to be scalable and fully customizable to meet you right where you are. By comparing your existing network infrastructure to the building blocks inside the starter kit, you can pinpoint areas of immediate need and areas you can come back to later.

By eliminating the need to pick and choose individual components, you save time and money and avoid the eventual finger-pointing that occurs when some of the components do not work well together. The ISP Starter Kit can be fully operational within a few days instead of weeks. As a result, you can build a cost-effective strategy without draining your resources and keep making updates as your cash flow increases.

About ePlus Service Provider Group

Our mission is to "make life better by connecting people through innovative communication systems." To do so, we offer a wide range of telecommunications services to bridge the gap between overly complex networks and efficient networks.

Our team leverages over 30 years of experience, along with hundreds of industry and manufacturer certifications to support ISPs through critical development, management, and ongoing growth of their networks.

Developing Networks With Years of Experience

Our team of dedicated technical experts have been developing, operating, and maintaining networks for decades. Every solution our team provides, including the ISP Starter Kit, has been tested time and time again for the best results.

We understand no two networks are the same. This belief enables our team to guide you toward the best solutions for your unique network. Through our extensive list of partners, we carefully select the right networking components based on your network and goals.

Quality Network Support From Day One

Engaging with experienced partners like ePlus from the beginning of the project helps to ensure the network is set up correctly from the onset. We offer quality network support and guidance from highly skilled, experienced practitioners to help you get your network up and running successfully, providing your subscribers with a great first impression. Our team designs a complete implementation plan based on your specific and unique goals, which can be used to build, maintain, and scale your network.

Conclusion

As an emerging ISP, you're dedicated to improving connectivity for all in your service area. Your network architecture can either push you toward that goal or could lead to challenges and roadblocks. The ISP Starter Kit can help you build the strong foundation you need to steadily grow a resilient network. And ePlus can help support you each step of the way.

Let Us Customize an ISP Starter Kit to Fit Your Needs

Our goal is to help you build a reliable, scalable, and high-quality network. Let us tailor an ISP Starter Kit for you, based on your current and future requirements.

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