



# Backhaul Compliance



# Executive Overview



Explosive growth in the global demand for bandwidth is outstripping legacy technologies' ability to keep up. As more operators turn to alternatives to meet bandwidth demands and preserve the quality of their user experience, significant business opportunities are opening up for backhaul providers.



Backhaul provisioning involves significant risks, however. In the heterogeneous networks that backhaul providers use to carry traffic between the edge and core of their customers' networks, achieving end-to-end visibility of that traffic can be very difficult. It also can make it nearly impossible to manage complex, customer-specific backhaul service level agreements. When that happens, backhaul providers can very quickly find themselves incurring steep financial penalties.

This guide discusses market trends that have come together to create these opportunities for carrier backhaul providers. It details challenges that backhaul providers face with network traffic visibility, and how these challenges can play out in bidding on these contracts, setting the right SLAs, and successfully managing to them. Lastly, the paper discusses a solution from SevOne designed specifically to give backhaul providers the network visibility they need to be more successful.



## Complexity Introduces Risk.

Carrier backhaul networks typically include a variety of technologies from vendors such as Ciena, Cisco, Juniper, Nokia, Tellabs, and eNID vendors like Accedian, RAD and others. While these multi-vendor, multi-technology networks improve and simplify things for end users, they make everything between the RAN and core networks much more complicated. This complexity significantly increases the number of possible failure points. It's why purchasers of backhaul services place so much importance on service assurance. CSPs want to ensure that the services they offer stay within pre-defined levels of service quality so that they consistently meet subscribers' expectations.

For many backhaul providers, defining the right SLA specifics, managing to them, and reporting to customers about their performance against those benchmarks, has become very difficult. Generally speaking, when backhaul providers miss the mark on any of these targets and tasks, they incur significant financial losses. Following are some of the specific challenges backhaul providers presently face with SLAs.

## Defining & Managing Carrier Backhaul SLAs.

In shaping SLAs, the first step for the CSP customer and the backhaul provider is to define service quality objectives and thresholds. Items such as bandwidth profiles, policies for priority traffic and preferred routing, service level specifications for different classes of service, and other operational details are spelled out in detail. How these items will be measured and reported on are also covered in SLAs.

To understand their performance, and to be able to prove to customers that they met contracted service levels, backhaul providers need an effective way to proactively monitor their IP/Ethernet infrastructures. Yet meeting this business requirement has become difficult for many backhaul providers. Following are some of the reasons why.

### Legacy Tools Fall Short

Legacy network monitoring and management tools were not designed to handle the varied and virtualized resources now deployed in backhaul providers' networks. As a result, these systems are incapable of delivering the real-time visibility providers need to monitor their infrastructure's performance proactively so they can spot and mitigate problems before they spiral into SLA violations.

### Limited End-to-End Visibility

Vendor-specific element management systems (EMSs) are useful in that they enable providers to generate tests (e.g. Y.1731, Cisco IPSLA, Juniper RPM, etc.) covering certain sections of the infrastructures – a cross-section slide. However, with their single-vendor or single-technology focus, they are typically unable to contribute to the consolidated, end-to-end service delivery that providers need.

### Complex Exclusion Periods

This lack of consistent visibility is further compounded by the lack of coordinated exclusion periods between EMSs, resulting in either time-consuming manual calculations, inaccurate SLA compliance reports, or both.

Exploding consumer demand for bandwidth and CSPs looking for help to meet that demand adds up to attractive new business opportunities for backhaul providers. But the issues and challenges involved in servicing this business can make these risky ventures for providers.

Without the right approach, and smarter network monitoring and management tools, backhaul providers can paint themselves into an operational corner by:

- Deploying multiple network monitoring tools and EMSs, and still having limited internal awareness of performance levels against SLA commitments
- Running multiple, overlapping SLA tests with inconsistent reporting
- Lacking automated ways to measure and report on customer-specific exclusion periods
- Lacking automated creation and easy customization of SLA reports to accommodate customer requirements and preferences (e.g. weekly, monthly, specific sites, etc.)
- No single dashboard to create, view, share, save or download multi-tenant SLA reports
- Inability to provide API-level data exports to customers for analysis, traffic modeling, etc.
- Not meeting SLAs and incurring financial penalties for non-compliance
- Low customer satisfaction and churn, along with the resulting revenue losses
- Inability to automate SLA compliance data with internal business processes

# Demand Outpacing Supply Creates Opportunities.

Statistics on global connectivity growth and rising bandwidth demands are truly mind-boggling. One reliable source, the [2017 Cisco Visual Networking Index](#), offers the following highlights.

- 58% of the world's 7.5 billion people will be internet users by 2021.
- On average, each user will have between 3 and 4 connected devices by 2021.
- Global IP traffic will grow three-fold from 2016 to 2021 (CAGR of 24%).
- Monthly traffic consumption will grow to over 35 GB per person by 2021
- Internet video will comprise 81% of all consumer Internet traffic in 2021, up from 72% in 2016.

This strong demand presents tremendous growth opportunities for backhaul carriers that are well-positioned and prepared to capitalize on it.

Carriers are poised to carve off some of this business and claim it as their own. The reason is two-fold. The first is on the supply side. These companies have built out their networks by investing in new technologies, greater coverage, and stronger and bigger pipes. Having made those investments, they have the networking capacity to take on new business.

The second reason is on the demand side. Legacy TDM-based (T1/E1) technologies are not keeping up with the fast-paced increases in consumer data demands. As a result, many

major communications service providers are partnering with backhaul carriers that can help them bolster their networks and meet their bandwidth needs by providing cost-effective, flexible, and scalable networking services.

The need to fill these gaps creates opportunities for backhaul providers. By leasing lanes of their network highways, backhaul providers help move traffic between the edge and the core of their customers' networks. The operators are happy when their bandwidth needs are being met and their end users' applications are performing as expected, and backhaul providers are happy because they are monetizing their network infrastructure investments.

The wildcard in the backhaul equation is network complexity. When something goes wrong, network performance falters, the complexity of their networks often makes it difficult for backhaul providers to properly document—prove—their network performance.

As a result, when big operator customers start looking to affix blame for an outage or performance problem, backhaul providers can easily find themselves at risk. That risk stems directly from providers' backhaul service level agreements (SLA). Missing the mark on SLA definitions, not proactively managing to SLA levels, and not being able to prove performance levels were within agreed-upon ranges can all drive backhaul providers into money-losing situations.



# A Smarter Approach – The SevOne Backhaul Compliance Solution.

Business opportunities never last forever, so for backhaul providers, now is the time to capitalize on customers' needs to meet the huge demand for bandwidth. The trick is doing so profitably.

To do that, providers need to craft the right types of SLAs, toe the line on delivering their services as promised, and be able to prove they've done so via automated, customizable, and efficient reporting.

One way for providers to do that is to cobble together something using their existing, disparate tools, then throw bodies at all the manual patch-ups and work-arounds that will end up being required.

There is a smarter way for providers to pursue and win new carrier backhaul business, and to service it successfully and profitably. That different, more effective path is to implement the **SevOne Backhaul Compliance Solution**.

This SevOne solution allows backhaul providers to immediately prove that customer-specific contracted service levels are in compliance across a multi-vendor carrier backhaul infrastructure. Leveraging SevOne's industry-leading network and digital infrastructure monitoring platform, the solution enables providers to lower their operational costs while increasing customer satisfaction and reducing churn through comprehensive, exclusion period-based, testing of their multi-vendor infrastructures.

With the SevOne Backhaul Compliance Solution, operators can:

- Increase SLA transparency with customers
- Easily document their compliance with contracted service level commitments
- Proactively isolate and alert on SLA compliance ahead of service impacting events to meet and exceed customer expectation
- Create customized SLA measurements based on customer-driven exclusion periods
- Bid on new backhaul business with the confidence you will meet all contractual SLAs



# SevOne: Bringing it All Together



Assuring compliance with a wide range of customer-specific SLAs with unique exclusion periods requires a platform capable of integrating with and gathering performance data across the entire backhaul infrastructure. Critical elements include SNMP and IPSLA, and adapters to collect Y.1731 test data as shown below, and back again, with minimum, maximum, and PASS/FAIL standard deviation calculations.

The SevOne Platform then automatically calculates and displays pass/fail status for SLA metrics on a per tenant basis, including:

### Mean Time to Repair

Measures average interruption time period for a defined local access and transport area (LATA) for multiple time periods as required for an agreed time. Calculations include TTR per occurrence and PASS/FAIL.

### One Way Frame Jitter

Measure the millisecond variance in frame delay between two frames as measured at ingress and egress UNIs, with minimum, maximum, standard deviation and PASS/FAIL calculations.

### Circuit Availability

Measures percentage of time of availability for an agreed time period, based on minutes of disruption time with PASS/FAIL calculations.

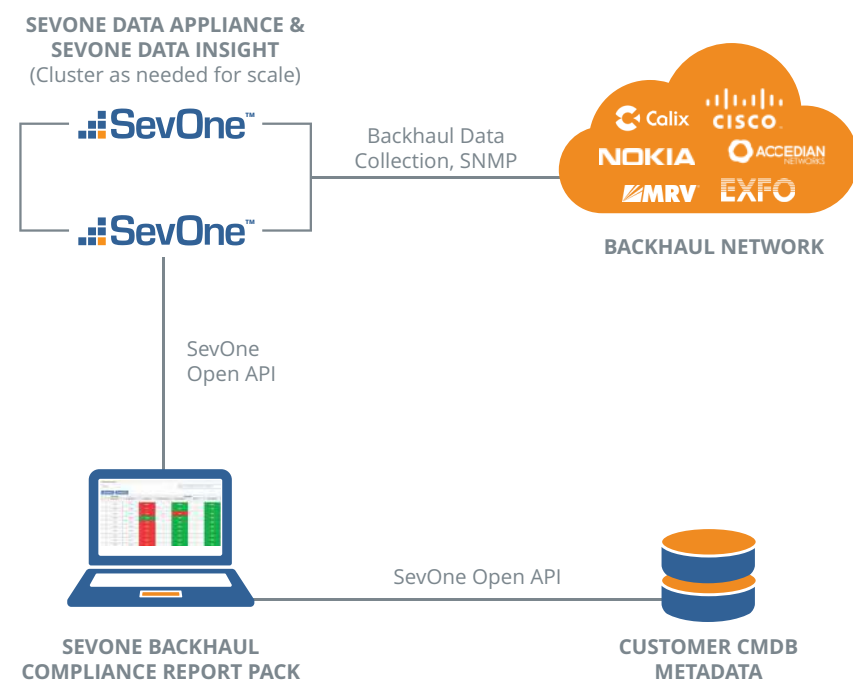
### Round Trip Delay

Measures the time in milliseconds between performance tests sent from one UNI to another and back again, with minimum, maximum, and PASS/FAIL standard deviation calculations.

### Data Delivery Ratio

Measures the ratio of performance test frames successfully delivered versus those sent, with minimum, maximum, standard deviation and PASS/FAIL calculations.

## Backhaul Compliance Solution Components



Backhaul Report Widget

Customer: [Dropdown] Group: Y1731-Customer-Tom 12/01/2017 - 01/01/2018

Download CSV Download JSON Exclusions: yes

#	Frame Jitter			Repairability			Availability		
	FJ Max [ms]	FJ Std [ms]	FJ Pass/Fail	MTTR per LATA [h]	MTTR Pass/Fail	TTR [h]	TTR Pass/Fail	Circuit Availability [%]	Avail. Pass/Fail
0	10.0000	2.8706	FAIL	0	PASS	0	PASS	100.0000	PASS
1	10.0000	2.8706	FAIL	0	PASS	0	PASS	100.0000	PASS
2	10.0000	2.8706	FAIL	2.1232	FAIL	0	PASS	94.1231	FAIL
3	8.0000	2.8706	PASS	0	PASS	0	PASS	100.0000	PASS
4	11.0000	3.8706	FAIL	0	PASS	0	PASS	96.1424	FAIL
5	11.0000	3.8706	FAIL	0	PASS	0	PASS	96.1424	FAIL
6	11.0000	3.8706	FAIL	0	PASS	0	PASS	96.1424	FAIL
7	11.0000	3.8706	FAIL	0	PASS	0	PASS	96.1424	FAIL
8	11.0000	3.8706	FAIL	0	PASS	0	PASS	96.1424	FAIL
9	11.0000	3.8706	FAIL	0	PASS	0	PASS	96.1424	FAIL

This level of automated analysis enables both on-demand and scheduled creation of SLA reports, such as the one shown here.



# Conclusion.

The SevOne Backhaul Compliance Solution helps carrier backhaul providers in every phase of this business. The end-to-end infrastructure visibility it delivers lets providers know their networks' capabilities inside and out, so they can define SLA terms and levels they know they can meet. That same visibility enables providers to proactively monitor their environments and get early warnings of building issues so they can mitigate them before they cause SLA-breaking problems. And its unlimited scalability and micro-granularity enables backhaul providers to automatically capture and easily report on all dimensions of network performance.

In summary, the SevOne Backhaul Compliance Solution gives providers a sure-footed, manageable, and cost-effective way to compete and win in this rapidly growing market.

## CONTACT US

To learn more about how the SevOne Backhaul Compliance Solution can help give backhaul providers the network visibility they need to be more successful, contact a SevOne representative at [solutions@sevone.com](mailto:solutions@sevone.com) or visit us on the web at <https://www.sevone.com/backhaul>.

## About SevOne.

SevOne provides the world's largest CSPs, MSPs and Enterprises with the most comprehensive technology portfolio to collect, analyze and visualize network & infrastructure performance data to deliver actionable insights to compete and win in the connected world. SevOne serves organizations that are looking to complex, dynamic next-generation infrastructure such as software defined networks, orchestrated containers and cloud technologies to support their business goals.