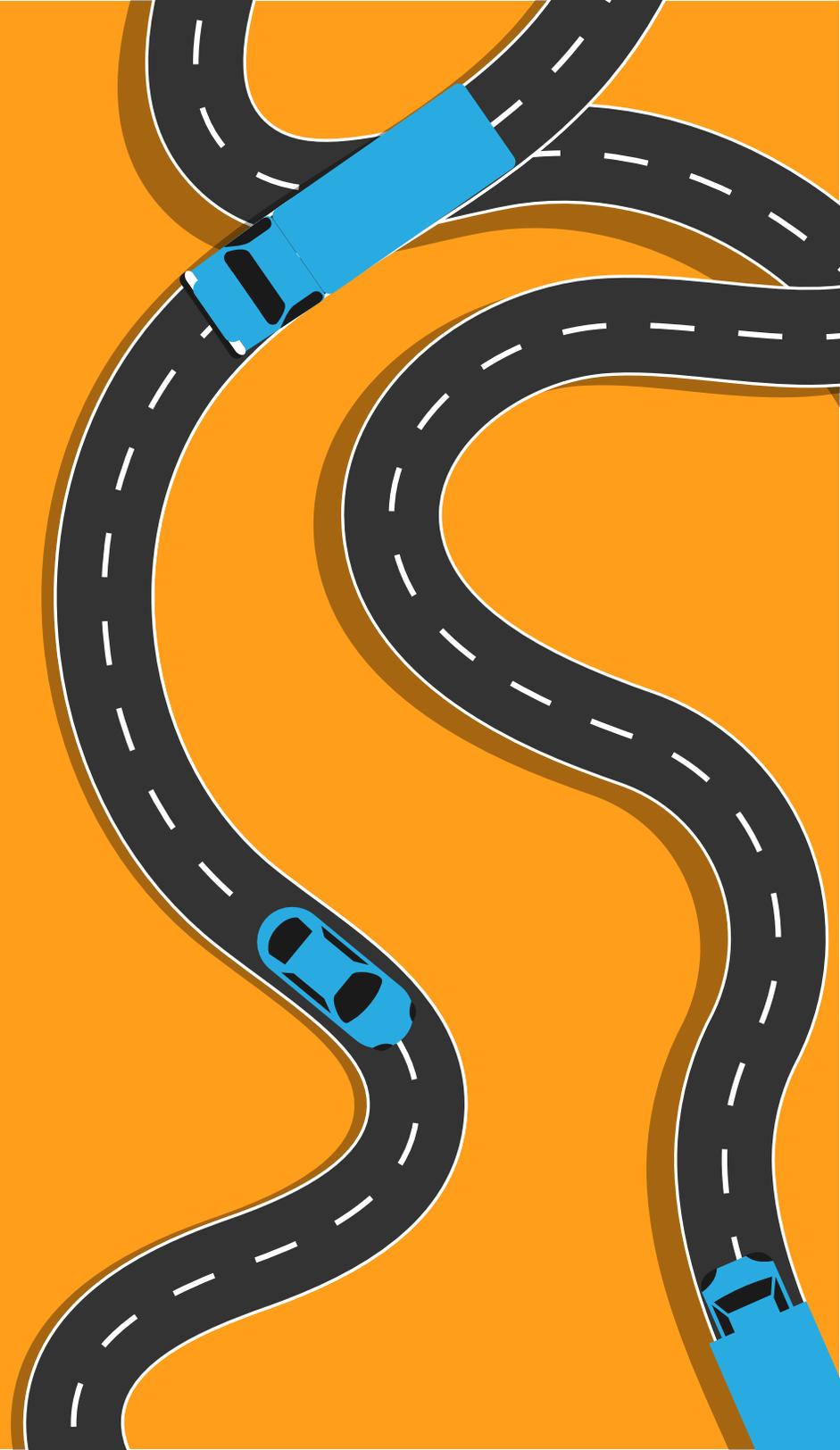




Supercharge your virtual app and desktop user experience

How Citrix SD-WAN creates a reliable WAN
for high-performance application delivery



Delivering a great user experience is everything

You already know the advantages of virtual applications and desktops. Making sure your employees have a great user experience, however, will help you get the most out of your investment, encourage adoption, and reach new levels of productivity.

SD-WAN technology makes this possible, whether people are working from a branch office or a remote location far from the data center.

It allows you to:



Provide more bandwidth over available locations



Optimize performance for virtual apps as well as SaaS and other bandwidth-intensive apps such as VoIP



Ensure always-on connections with the highest possible quality experience

“Before SD-WAN, people’s time was wasted by long latencies, and they can now be much more efficient. As soon as we connected SD-WAN ... drawings that had taken 25 minutes to open were ready in just 5 – an improvement of 80%.”

-Andrée Bengtsson
IT Coordinator, Yakasaw Europe

Why traditional WANs can't keep up

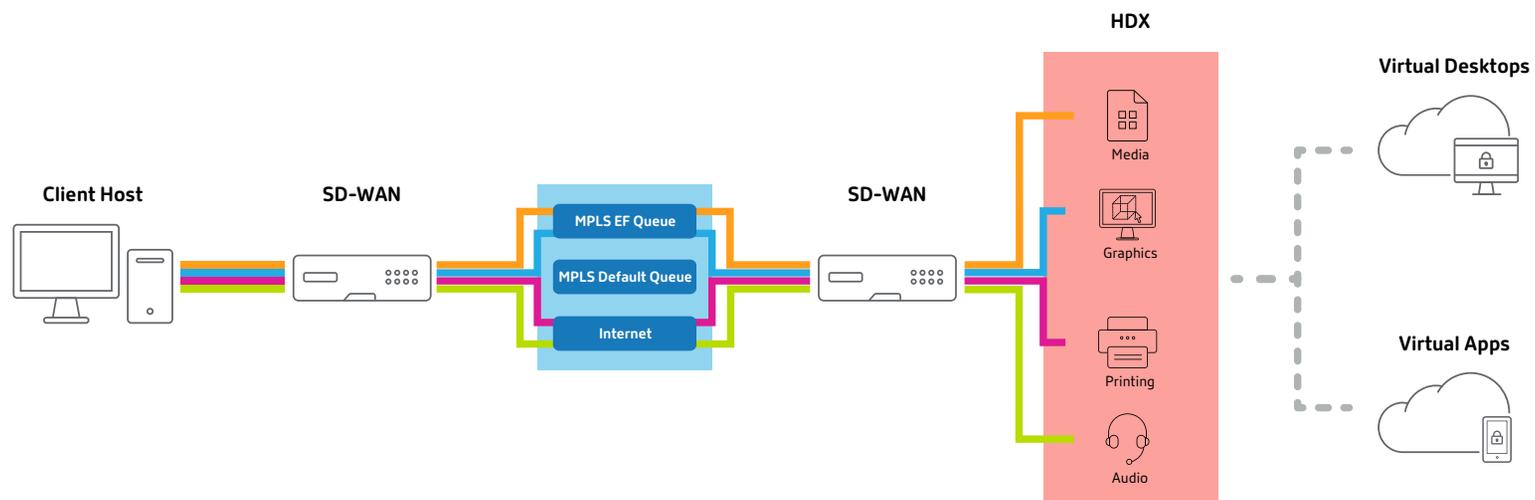
People in remote and branch locations rely on the performance of their digital workspace to be productive. If your WAN can't keep up with the bandwidth demands of virtual apps and desktops, rich media, high-resolution monitors, and file sync, the user experience — and ultimately the business — will suffer. But most often, the problem isn't your virtualization software — it's the WAN.

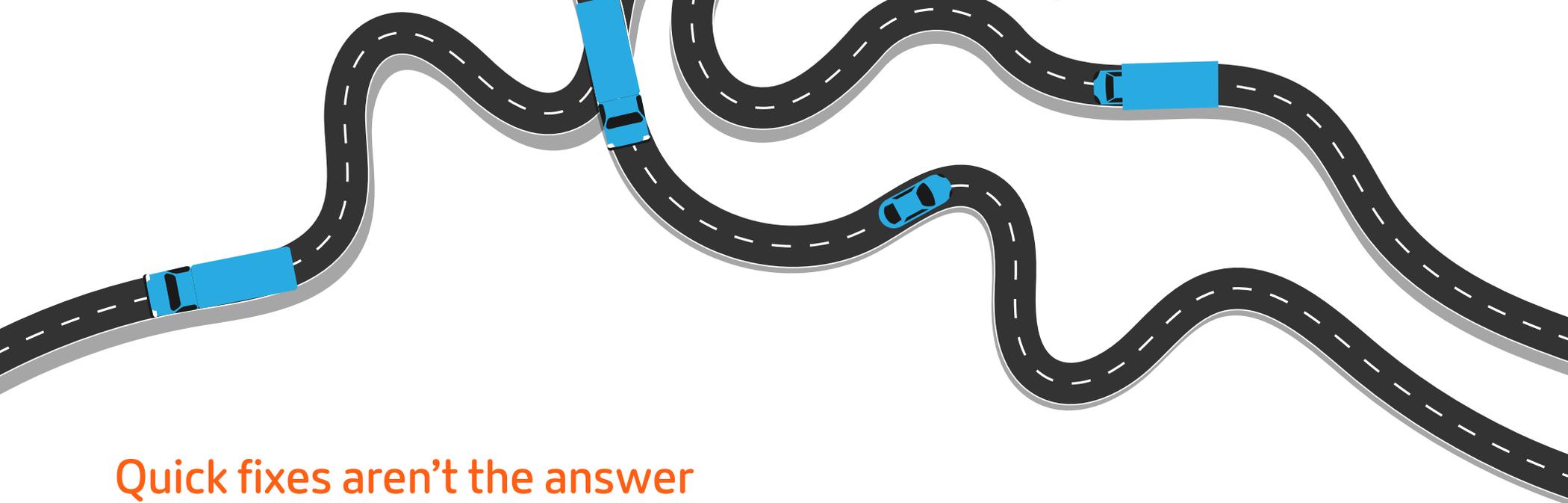
A poor backup response in an outage can be disruptive to users' work and result in lost revenue. Even a failover to a backup link may not happen quickly enough to prevent a dropped session. Additionally, the lack of traffic prioritization can leave your most critical apps without enough bandwidth.

WAN latency and congestion can stretch round-trip time (RTT) hundreds or even thousands of times longer than a corporate LAN. The increasing bandwidth demands of virtualization, video, teleconferencing, and other rich media can slow business apps using the same links.

“I&O leaders looking to improve network availability and minimize latency for VDI traffic should consider deploying SD-WAN.”

-Gartner¹





Quick fixes aren't the answer

What you probably already considered

Adding a backup link

Adding bandwidth

Adding branch office servers

Creating local VDI infrastructure in branches

Activating generic router QoS optimization

Why it falls short

- Can't ensure fast enough failover to preserve the user's session.
- Fails to relieve congestion in situations short of an outage.
- Results in high-cost, slow MPLS upgrades.
- Consumer-grade DSL and cable lack predictability.
- Without link aggregation, backup bandwidth may go unused.
- Trades bandwidth issues for new burdens.
- Added costs around remote management and data replication.
- Adds cost.
- Fails to help remote and mobile workers connecting via WAN.
- Lacks application awareness
- Leaves the network unable to differentiate between quality-dependent traffic like desktop virtualization and less critical activity like background printing.

Citrix SD-WAN adds even more value to your virtual app and desktop deployments

Citrix SD-WAN helps you realize more value, faster, from your current Citrix Virtual Apps and Desktops initiatives by creating a virtualized network infrastructure that provides an excellent experience for all users regardless of location or network conditions. SD-WAN eliminates network challenges so you can confidently extend your virtualization deployment to all your branches and remote sites.

By virtualizing and bonding different types of WAN links, including lower-cost broadband, 4G, and LTE, you no longer are limited to adding costly MPLS to get the bandwidth you need to reliably deliver virtual apps and desktops to branch and remote locations. Video, rich media, voice, and other demanding applications perform just as well for remote and branch users as they do over the corporate LAN.

A more reliable network adapts to application demand and provides granular visibility into WAN traffic while optimizing performance where it counts the most. Users gain a great experience for every app, every time, and your business gains the flexibility and mobility to become more productive than ever.

“We’re able to utilize commercial-grade broadband services along with 4G/LTE and our Metro-E fiber to facilitate our network reliability, which is key for our organization because, as we’re a full Citrix Virtual Desktops environment, we need to make sure we have full uptime.”

-Trevor McCain
Network Administrator, The Watershed

Citrix SD-WAN lets you:

- 1 Increase bandwidth by aggregating all available bandwidth into an active/active connection.
- 2 Optimize performance and tune network policies with HDX Quality of Experience technology.
- 3 Ensure always-on connections for Citrix Virtual Apps and Desktops users with the highest-quality experience — even for rich media and high-definition video.

4 benefits Citrix SD-WAN delivers

1. Improved reliability

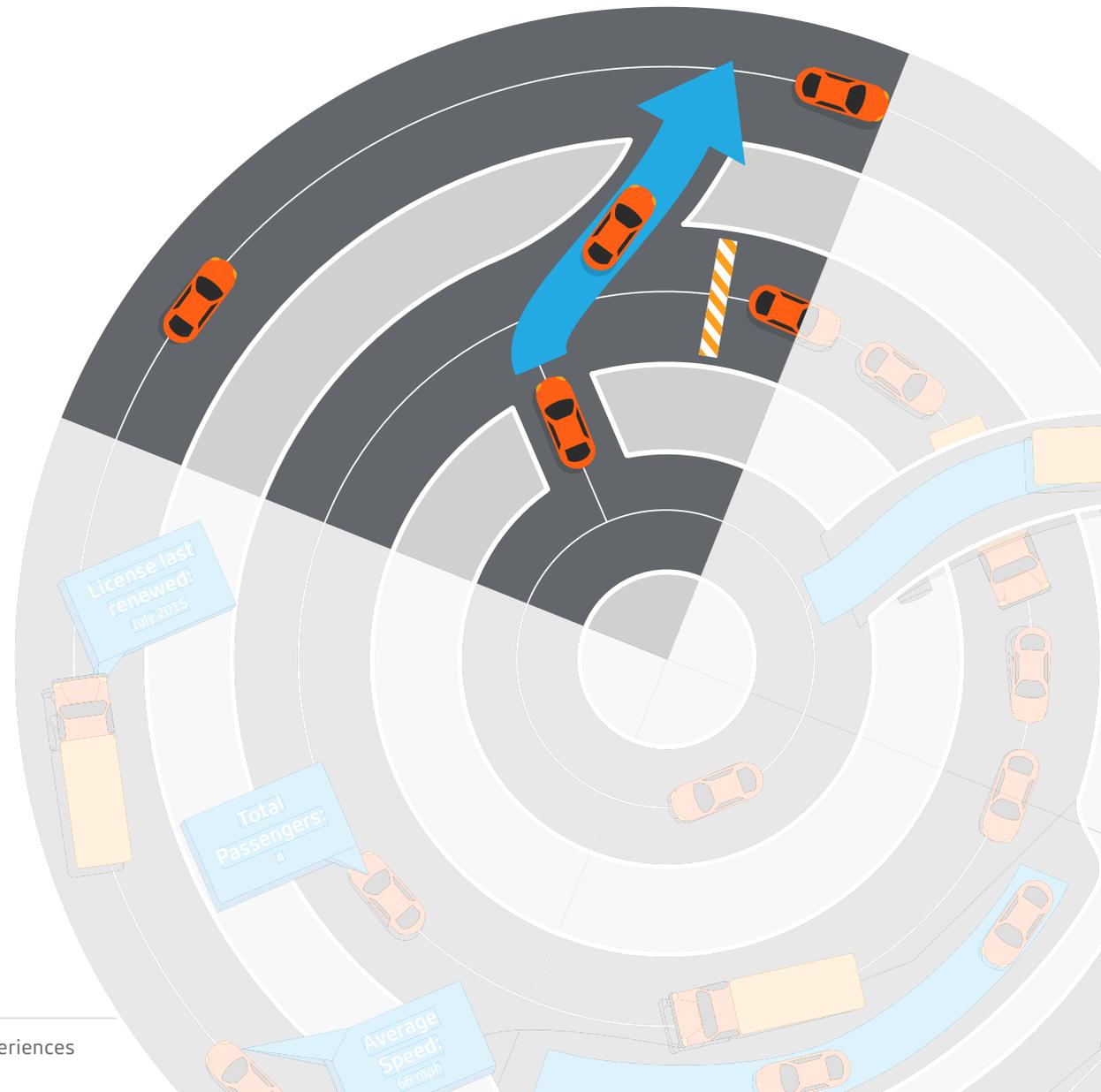
Whether users access their Citrix virtual apps and desktops from a data center or cloud, Citrix SD-WAN makes sure that underlying network issues don't interfere with access or their experience. The solution enables a self-healing network, automatically rerouting traffic off of poor-quality or failed links—and doing it instantly so user sessions don't disconnect.

Citrix SD-WAN uses two or more links to create a virtual connection between the branch and the server. If there is a failure on one of the links, or if one begins to degrade, all traffic immediately will be moved to the remaining link, preserving the user sessions and user productivity.

2. Higher quality

3. More bandwidth

4. Better visibility



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2. Higher quality

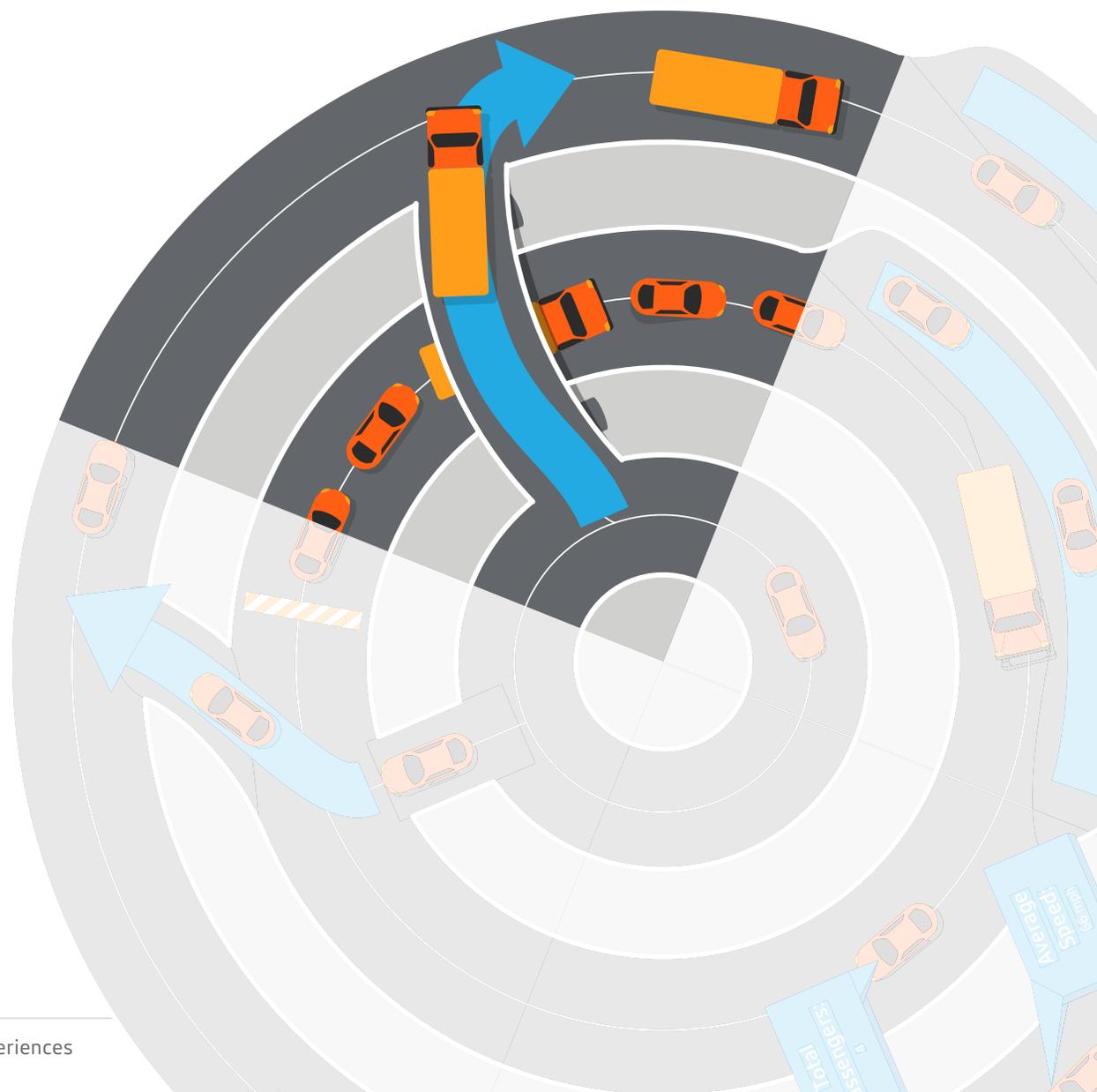
Fine-grained, application-aware control over QoS helps you ensure a good experience for every application people use.

Multi-stream ICA selects the best path for each HDX traffic stream over one or multiple ports. Session fairness ensures that no single user affects others on a constrained WAN by making sure that traffic is forwarded evenly from all users. A priority queuing engine reserves a configured percentage of bandwidth for each class of traffic or queue to ensure minimum bandwidth utilization.

Best path selection chooses the ideal network path for each HDX sub-session. Lower-priority HDX sub-sessions, such as printing and file downloads, can be moved to slower links to leave the best-performing links available for more latency-sensitive traffic, such as screen refreshes and mouse movements. Local media caching accelerates performance and video download times by up to 45 times because media is delivered at LAN speeds. At the same time, WAN link usage for redundant transfers is minimized.

3. More bandwidth

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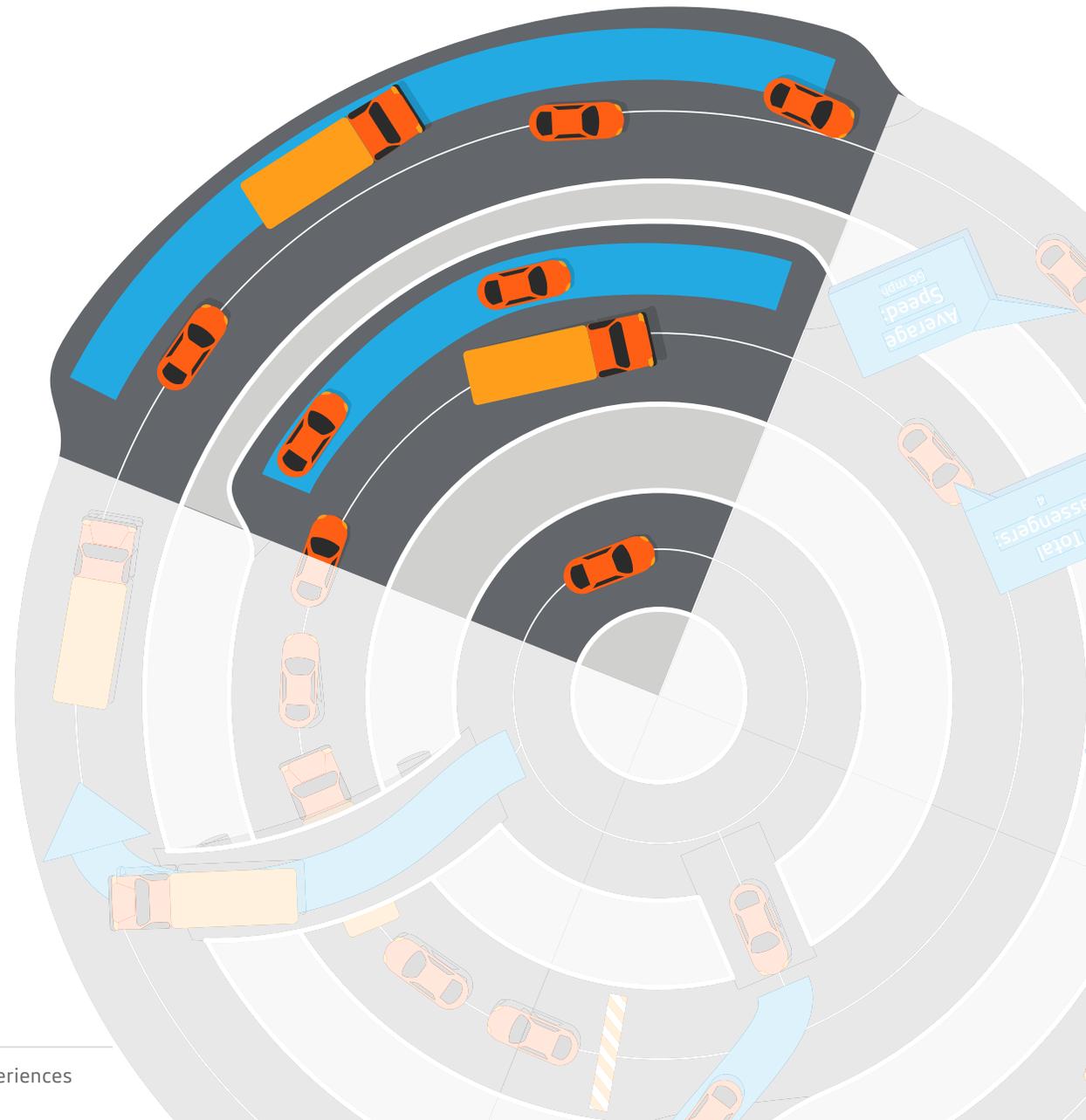
3. More bandwidth

Citrix SD-WAN allows you to augment MPLS with broadband—all logically bonded into a single link—to add bandwidth more quickly, flexibly, and at a lower cost than an MPLS upgrade. Because all bandwidth is active, your current unused backup links become available, immediately increasing available bandwidth and allowing you to support more users, apps, video, other rich media, and more of all the other traffic your business runs on.

With Citrix SD-WAN, the bandwidth you do have is used efficiently. Intelligent bandwidth reservation ensures the critical applications such as virtual desktops and applications have sufficient bandwidth when needed during peak usage times, while allowing other applications to use that bandwidth during other times. And the unique dual-ended QoS feature makes sure that data center links are never oversubscribed.

And for additional bandwidth at the branch, Citrix SD-WAN can make use of wireless links with an understanding of monthly usage limits and varying bandwidth availability. All these work together to ensure that you have abundant bandwidth for critical applications and aren't wasting money on unused capacity.

4. Better visibility



4 benefits Citrix SD-WAN delivers

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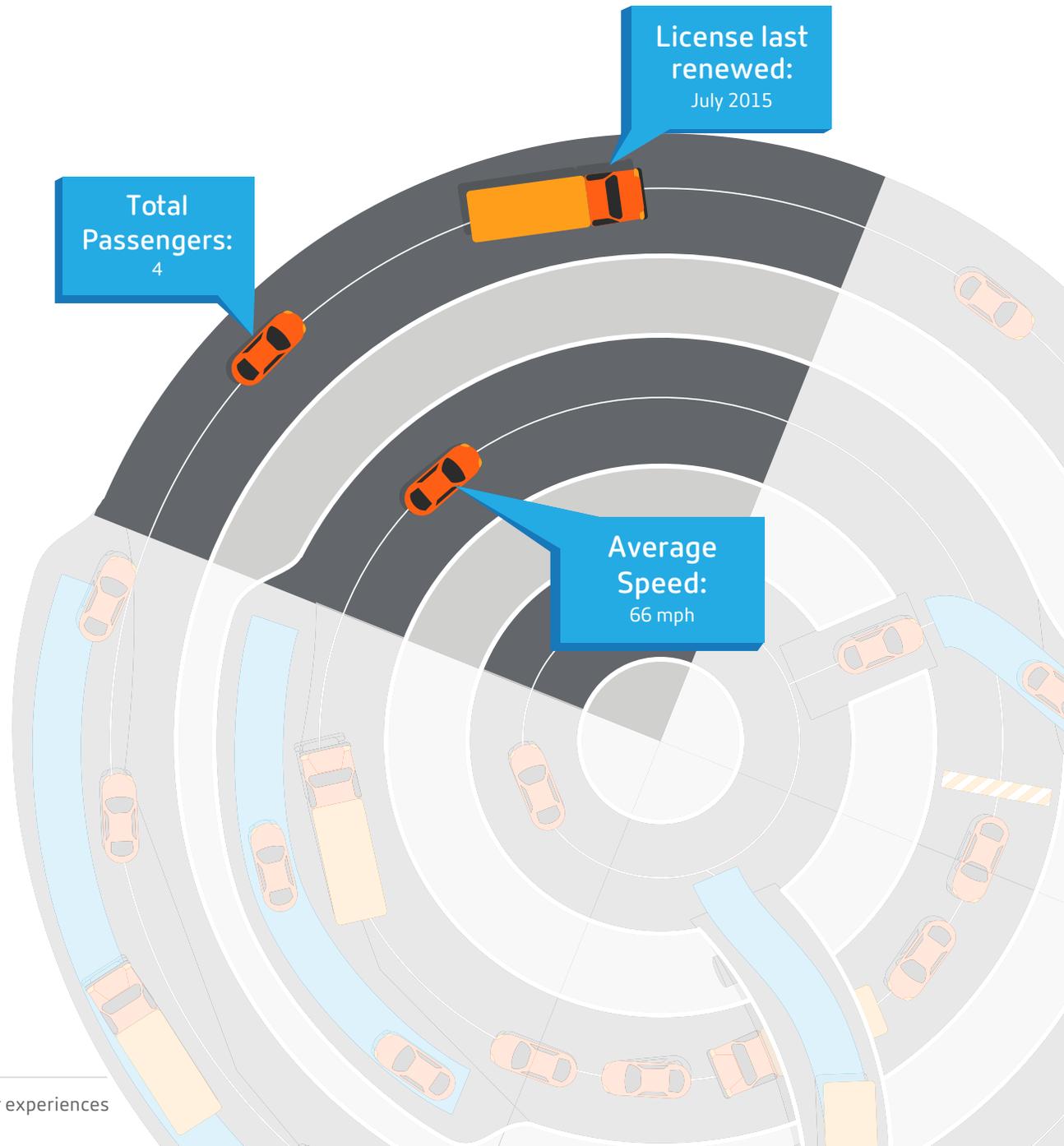
3. More bandwidth

4. Better visibility

Citrix SD-WAN provides deep visibility into the WAN, helping you understand the quality of experience you're delivering, with an easy-to-use platform for troubleshooting and data-driven policy tuning.

HDX Insight, powered by Citrix Application Delivery Management, shows latency in detail, even for individual users, for each step in the application delivery flow. You can view both real-time and historical data for users, sessions, and sites, with drill-down capabilities to discover the source of any ongoing, imminent, or potential future application performance issues. You can access HDX Insight right inside Citrix Director, as well.

Knowledge of how current SD-WAN policies are impacting the user experience helps guide further fine-tuning. You can even apply QoS rules to individual HDX flows for specialized handling of each type of data. Within the HDX Insight dashboard, HDX QoE gives you instant visibility into the QoE parameter for each application based on performance metrics such as latency, jitter, packet loss, and packet drops.



But don't just take our word for it

Rehab Management improves branch productivity and security while lowering costs

Rehab Management provides return-to-work, injury management, ergonomics, and psychological services through a network of offices and field locations across Australia. With only 2M of bandwidth, the company's MPLS-based WAN was unable to deliver video content and virtualized applications. This raised concerns about user productivity and security as well as the prospect of rising IT costs.

Citrix SD-WAN allowed Rehab Management to eliminate its MPLS connections and make more effective use of the broadband already deployed at remote locations. The company now uses Citrix SD-WAN and Citrix Virtual Desktops to replicate its Windows environment to employee devices in remote areas throughout the country, improving the quality of services provided to patients and increasing workforce mobility and security.

Results

- Increased bandwidth 10 times to support Citrix Virtual Desktops and video traffic
- Avoided the \$2,000-per-location monthly cost of an MPLS upgrade
- Reduced costs from \$500 per month per location to \$100 by switching to three asymmetric digital subscriber lines (ADSLs)
- Mitigated the performance risk by bonding three ADSL WAN links

“Tackling the connectivity issue at its core means no office is at a disadvantage, with cost-effective tools that complement our existing IT infrastructure empowering employees to do their job remotely.”

-Boris Kotevski
National IT Manager,
Rehab Management

For even more ways to deliver a great experience, explore Citrix Workspace

Citrix Workspace gives you all the benefits of Citrix SD-WAN and more, so you can deliver secure, unified, and contextual digital workspaces with a great user experience from any device or location.

Secure remote access

- Consolidate remote access solutions, and provide single sign-on across all web, virtual, mobile, and SaaS apps
- Enable multi-factor authentication and end-to-end monitoring across all application traffic
- Deliver the right apps to the right users at the right time with contextual access policies

Content collaboration

- Enterprise-grade file sync and sharing services across all corporate and personal mobile devices, with total control for IT
- Access, sync, and securely share files from any device
- Offline access keeps productivity up, even when users are on the go
- Automate feedback and approval workflows to streamline your business and maximize productivity

Analytics and insights

- Use machine learning to detect and analyze threats based on user behavior
- Automate the aggregation of data across users, devices, networks, apps, and files
- Prevent data loss, uncover ransomware, detect noncompliant devices, and more

Unified endpoint management

- Full access to mobile device management (MDM), mobile application management (MAM), mobile content management (MCM), secure network gateway, and enterprise-grade mobile productivity apps in one comprehensive solution



Still not convinced? See for yourself.

Try Citrix SD-WAN for free for 90 days.

Citrix.com/products/netscaler-sd-wan/get-started

Source:

1. "How to Ensure Your Network Architecture is Ready for VDI and Desktop as a Service," Gartner report, April 2018.

