CASE STUDY

Texas State Department of Transportation

SOLARWINDS AND PARTNER SKYLINE TECHNOLOGY SOLUTIONS PROVIDE SOLUTION TO IMPROVE TRAFFIC CONDITIONS AND ENHANCE CITIZEN SAFETY

Dallas is the third-largest city in Texas, with a population of more than 1.3 million—and growing quickly. To support its residents, the Texas Department of Transportation (TxDOT) district (regional traffic operations zone) in Dallas has nearly 4,000 Intelligent Transportation Systems (ITS) traffic-related devices, including cameras, LED-based Dynamic Message Signs (DMS), and more. Yet, until early 2018, the district had no way to monitor the status of those devices and no way to get a comprehensive view of the complete network.

Today, the district not only monitors all road devices in Dallas, it has a complete view of the region's infrastructure—both its traffic and business networks—enabling TxDOT to enhance device uptime, improve overall performance, traffic, and safety. Based on the success of this initiative, TxDOT is moving forward with expanding the Traffic/ITS infrastructure management capability statewide, including the remaining 24 TxDOT districts. This expansion is expected to introduce an additional 20,000 ITS traffic-related devices into management.

PHASE 1: DALLAS PILOT

TxDOT came into the Dallas Pilot with a clear picture of the results they wanted to see, the pain points they wanted to address, and the risks they wanted to mitigate. Brent Eastman, Program Manager—TxDOT Information Technology Division, boiled it down into these four objectives:

- Enable better network visibility and long-term capacity planning
- Improve performance and reliability
- Reduce district staff time remediating network issues
- Improve security of ITS networks

Enabling better network visibility to improve performance reliability and long-term capacity planning

Before the SolarWinds pilot, the district had no effective monitoring system to understand the status of its cameras, roadside signs, or even the network infrastructure supporting these devices. Officials didn't even know whether a device was functioning. One official in the traffic management section at TxDOT said, "We

would point our cameras at the road signs to see if they were working. Other than a driver calling and reporting an issue with one of our devices, that was the only insight we had."

This constant state of reacting to problems led the district to feel they didn't have the tools they needed to troubleshoot outages and they lacked the necessary visibility into performance and capacity issues. Making the district's challenges even greater, of the nearly 4,000 devices within Dallas' traffic network, almost half of those devices had no IP address, making monitoring nearly impossible.

Through a custom-built integration with TxDOT's Advanced Traffic Management System (ATMS), Lonestar, and SolarWinds IP-based discovery, Skyline was able to help the customer start monitoring all the active IP and non-IP devices in Dallas in under 30 days. This immediately transitioned the district from purely reactive to proactive management. The district gained the ability to monitor bandwidth, CPU, RSSI, and more, helping them understand the root cause of their network performance issues.

With all the metrics being recorded in SolarWinds products, the district took its first steps into being able to develop long-term capacity plans. Over time, the collection of metrics such as bandwidth and CPU utilization will help the district understand where bottlenecks are today and predict where they'll be in the future. Overall, having all the IP and non-IP devices monitored by SolarWinds allowed Skyline to create a single pane of glass and provide Dallas with dashboards, geographical maps, and ultimately a clear, holistic, end-to-end picture of their network.

Reducing the district staff time remediating network issues and improving ITS network security

Prior to the pilot, Dallas district personnel spent large portions of their time troubleshooting issues across their ITS network. They would do manual checks of equipment, going to the webpage of each camera and checking if the camera came up and the quality of the video. They would make changes on network gear in attempts to resolve outages or drive hours to a location to check the status of a single switch or sign.

Once the Dallas pilot was live, the district gained access to live polled data in SolarWinds, a suite of alerts tailored to their needs, and Skyline's 24/7/365 network operations center. Skyline worked with Dallas to define their high priority devices in SolarWinds, so alerts on those devices would be high severity. SolarWinds also allowed Skyline to create dependencies amongst devices, IP or non-IP, across the network. This prevented the districts from receiving a flurry of alerts when an upstream device went down. In the past the district would learn of a network

outage and it would be an exercise of going from device to upstream device to see where it originated. Now, with SolarWinds dependencies, they'd know the origin as soon as alerted.

In addition to implementing SolarWinds, Skyline also became the first responders to outages and alerts. This allowed them to define standard operating procedures, work instructions, and escalation paths, all with the end goal of remotely remediating as much as possible, allowing the district to spend more time on planning and projects and less time reacting to calls and outages.

As Skyline took on the remote remediation responsibilities for Dallas, it soon became clear SolarWinds® Network Configuration Manager (NCM) could help the district execute on architecture and security enhancements network wide. With NCM, the district could periodically back up network device configurations, shortening the MTTR when a device needed to be replaced. They could also standardize their deployment of the network protocol spanning tree, preventing looping and unexpected routing behavior. NCM also allowed the district to roll out baseline configurations and centralized authentication, creating a more controlled threat landscape. No more shared accounts!

PHASE 2: TXDOT BUSINESS NETWORK PILOT

The results of the Dallas Pilot were overwhelmingly positive. Skyline, via SolarWinds Network Performance Monitor, NCM, Server & Application Monitor, and Network Topology Mapper, had for the first time provided Dallas an end-to-end single view of their field devices and the network infrastructure supporting them. This success resonated within TxDOT and quickly drew the attention of the managers of the TxDOT Business Network, James Pennington and Kevin Wagner. James and Kevin wanted to see what SolarWinds and Skyline could do for them.

The goals for the Business Network Pilot were similar to those of the Dallas Pilot. TxDOT wanted to better understand the performance, capacity, resiliency, and security of its Business Network. To demonstrate the benefit TxDOT would get from leveraging SolarWinds, Skyline quickly expanded the TxDOT SolarWinds monitoring platform and brought 10 of the 25 Business Network districts into SolarWinds. Using SolarWinds discovery, Skyline was able to identify about 1,000 devices and 10,000 interfaces to be monitored. Several districts were selected for the Business Network pilot, including Dallas, Corpus Christi, and Houston.

Dallas was selected specifically so the value of having SolarWinds monitoring the entire network, from the internal Business Network to the road-side device, could be demonstrated. Skyline was able to show routing paths, network hops, latency, and bandwidth to TxDOT, so long-suspected issues spanning both networks could either be validated or dismissed.

Corpus Christi and Houston were selected because they are Coastal Districts, highly likely to be affected by storms and hurricanes. In fact, during the pilot, there was a tropical depression heading right for Houston. This provided an opportunity for Skyline to build a SolarWinds dashboard and accumulate all the information TxDOT needed to support their Emergency Operations Center; this included a live NOAA map, a geographical node status map, and network availability across the districts in the coastal region.

Over three months, Skyline worked with TxDOT to rapidly iterate and demonstrate the benefits of SolarWinds centralized monitoring and management. With SolarWinds, Skyline could quickly identify and highlight bottlenecks, identify inconsistent configurations, and show daily, weekly, and monthly trends. In a few short months, Skyline successfully showed TxDOT how the SolarWinds platform would be a perfect fit for the Business Network and it could provide the same benefits it did for Dallas and more. With the onboarding of the Business Network, TxDOT would have a holistic end-to-end view of their network from the Business Network firewall all way through to the end-point road-side device.

PHASE 3: SOLARWINDS STATEWIDE

With the back-to-back success of both the Dallas Pilot and the Business Network Pilot, the SolarWinds Skyline combination had shown TxDOT centralized monitoring and management was a step in the right direction. Skyline was soon asked to deploy SolarWinds monitoring as a Service to all of TxDOT. This meant onboarding the remaining 15 Business Network districts, and the remainder of all the ITS Network districts. At the time of writing, TxDOT has the entirety of the Business Network in SolarWinds, and eight of the 25 traffic districts. There are over 13,000 devices leveraging six SolarWinds products on the Orion® Platform. It's fully High Availability (HA) and integrated with state-of-the-art ITSM tooling.

What started as a pilot to improve performance, reliability, transparency, and security in a single TxDOT district turned into the transformation of the second-largest state DOT. Skyline Technology Solutions, leveraging the broad capabilities of SolarWinds product portfolio, provided an enterprise-level solution for the Texas Department of Transportation.

IMPROVED AWARENESS, IMPROVED PERFORMANCE, IMPROVED ACCOUNTABILITY

Today, the Texas Department of Transportation's Traffic and Business network devices are monitored, performance is optimized, and executive dashboards allow state officials to understand network uptime at a glance. Officials can run reports on device uptime for contractor-maintained devices vs. state-maintained devices and can determine the last person to implement a configuration change. The SolarWinds solution has helped TxDOT achieve the goals they set up during the early stages of the pilot and continue to build upon today.

Other results include:

- Improved resolution rates for networking performance and capacity issues
- Improved configuration management
- Improved log tracking and management
- Increased productivity of IT staff

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ABOUT SOLARWINDS

SolarWinds (NYSE:SWI) is a leading provider of powerful and affordable IT infrastructure management software. Our products give organizations worldwide, regardless of type, size or IT infrastructure complexity, the power to monitor and manage the performance of their IT environments, whether on-premises, in the cloud, or in hybrid models. We continuously engage with all types of technology professionals—IT operations professionals, DevOps professionals, and managed service providers (MSPs)—to understand the challenges they face maintaining high-performing and highly available IT infrastructures. The insights we gain from engaging with them, in places like our THWACK online community, allow us to build products that solve well-understood IT management challenges in ways that technology professionals want them solved. This focus on the user and commitment to excellence in end-to-end hybrid IT performance management has established SolarWinds as a worldwide leader in network management software and MSP solutions. Learn more today at www.solarwinds.com.

ABOUT SKYLINE

Skyline Technology Solutions has built a strong reputation of delivering business-aware IT solutions and outstanding customer service for commercial, federal, state, and local clients since 2004. Being an innovative leader in the IT industry requires much more than creating cutting edge technology. It involves understanding people and achieving effective communication, so pain points are revealed and resolved. This is the greatest challenge to success that we fearlessly face daily through every interaction. Providing solutions that are built upon well-designed and executed technology is also in our DNA. Skyline Technology Solutions was originally founded by providing unmatched network engineering solutions. As we evolved, we sought out partners, developed products and made acquisitions that continue to refine and elevate expectations. To us and those we serve, success means redefining what's possible and realizing opportunities to co-create value along the way.

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