



TRANSPORTATION, DRIVEN BY DATA

Transport for Greater Manchester keeps its millions of residents on the go

Transportation doesn't stand still because commuters don't stand still. Transport for Greater Manchester (TfGM) aggressively seeks ways to improve the region's public transport—leveraging data insights to provide easier, smarter, and secure ways for residents to travel and plan their journey.

The citizens of Greater Manchester, UK, have a multitude of transit options when looking to get to their destination. Whether they choose tram, bus, rail, car, cycling, or walking, residents have access to an extensive transportation network to help them get where they need to go.

TfGM is responsible for coordinating a range of transport services throughout the region and investing in the improvement of transport services and facilities. The organization's impact goes beyond ensuring transport services work efficiently and in a safe, reliable manner. It is also responsible for tracking and improving traffic flow, making infrastructure upgrades, and promoting walking and cycling as safe, healthy, and sustainable ways to travel. It also subsidizes more affordable fares to help senior citizens, children, and people with disabilities to get where they need to go.

TfGM is moving toward a new London-style, integrated transport system called The Bee Network. This system aims to take back public ownership of buses and eventually rail. TfGM is constantly looking to improve ways of working to ensure Greater Manchester's transformative new transport system is delivered in the best way for the people.

Planning for future needs

TfGM has been at the forefront of leveraging data and utilizing the latest technologies to improve reliability and predictability of its services. It has also developed an analytics system to support transport operations and line extensions.

By capturing intersystem data, TfGM can expedite its response to issues before they impact service, including monitoring traffic and keeping it flowing, even on



INDUSTRY: PUBLIC SECTOR

REGION: GREATER MANCHESTER, UK

VISION

Deliver modern, reliable, and efficient transport options and services for the citizens of Greater Manchester for years to come

STRATEGY

Improve responsiveness, security, and reduce costs using a hybrid cloud approach.

OUTCOMES

- Consolidates IT footprint to lower infrastructure, operational, and licensing costs
- Leverages data insights to improve security, performance, and availability monitoring
- Reduces OS patching update time from two weeks to two minutes

Greater Manchester's busiest roads. The organization assists local authorities in the management of an over 400-mile Key Route Network (KRN), using data to monitor traffic flow and develop policies, in conjunction with local councils and National Highways that reduce congestion and keep traffic moving.

The intersystem data was also used to influence TfGM's recently released 2040 Transport Strategy, a comprehensive and fluid plan designed to address long-term needs and aspirations for the region's transport network. This includes using data and technology to help reduce transport-related air pollution, increase efficiency of traffic movement, and replace its fleet with cleaner, lower-emission vehicles.

TfGM leverages data to develop easier, smarter ways to travel and help citizens use technology to improve their journeys. It has also embraced contactless ticketing across Metrolink to offer passengers a more convenient and paperless option.

It's a huge responsibility, considering more than 5.6 million journeys are made across the Greater Manchester transport network every day. TfGM also owns Metrolink, the UK's most extensive light rail network,

which is operated and maintained by Keolis-Amey, hosting approximately 44 million passenger journeys each year.

"We've got a vision of where we want to go and know we're going to need a modern, responsive, and cost-effective infrastructure to get there," says Jason Higgins, Lead Infrastructure Engineer at TfGM.

The move to modernize

TfGM supports the Greater Manchester Combined Authority (GMCA) and serves Greater Manchester, a metro of 2.8 million people across ten districts and one of the UK's largest regional economies outside of London.

Recently, it underwent a project to upgrade and modernize its data center. Its existing IT infrastructure was rapidly nearing end of life with older, unsupported technology and was proving to be costly to maintain with deteriorating performance. Additionally, the infrastructure was unable to support the workloads and new applications TfGM wanted to adopt to serve the future needs of Greater Manchester's citizens.

"Our goal was to create a hybrid approach where we would combine cloud management and monitoring

services with on-premises infrastructure to provide a modern and secure data center," says Higgins. "There was a lot of ambition to not just move to update our infrastructure, but to incorporate leading-edge technology and get us to the cutting edge."

A collaborative effort

TfGM worked closely with Hewlett Packard Enterprise and Microsoft to identify the right solutions to fit its current and future needs.

The organization chose a hyperconverged solution that included HPE ProLiant DL380 Gen10 servers and [Microsoft Azure Stack HCI](#) to provide the backup, disaster recovery (DR), patching, alerting, and security it was looking for. The solution also included five years of mainstream support from HPE.

Shifting to Azure Stack HCI gave TfGM the opportunity to consolidate physical servers, replace on-premises services with cloud-based services, and even migrate its large file services to [Azure Files](#), leaving a smaller storage footprint on-premises. TfGM also wanted the flexibility to plan its next stages and projects without worrying about a lack of security updates for some of its older servers.



We're solving problems before they are known to end users rather than dealing with them as they arise. That's a depth to our alerting capabilities that we didn't have before."

– JASON HIGGINS, LEAD INFRASTRUCTURE ENGINEER, TfGM

“Now, we have more time to either remediate or re-platform applications on our servers. Azure Stack HCI gave us breathing room from a security updates perspective,” says Higgins.

TfGM strengthened its disaster recovery capabilities by switching from replicating services between its internal data centers to having [Azure Site Recovery](#) replicate its workloads to Azure. Using Site Recovery helps TfGM keep its applications—both on-premises and on Azure—running during planned and unplanned outages. Adds Higgins, “We also moved to a hybrid Azure backup server and Azure Backup for hybrid backup.”

Greater economic impact

As a public-sector organization, TfGM understands the importance of value and cost efficiencies to conserve public funding.

“Our number one priority was to save costs, whilst improving securing and maintaining performance,” confirms Higgins. “With HPE and Microsoft, we had a much lower acquisition cost compared to similar options, and we’re saving money with a low-power solution. Replacing the previous storage system would have been seven times the cost of the HPE solution. That’s a big difference.”

The move to HPE ProLiant servers also enabled TfGM to consolidate its infrastructure from five SQL Servers down to two, a move that saved space, reduced energy consumption, and lowered operational costs. “We know we’re saving a lot in terms of electricity costs,” Higgins says, “because we are running fewer physical servers than we were previously.”

Updates at hyper speed

The new, combined infrastructure and faster hardware make historically mundane, day-to-day tasks like software updates seem effortless.

As Higgins explains, “We’ve seen a dramatic improvement in performance. One example: we were able to install Windows updates on 23 separate servers simultaneously in just two minutes. If we had done that manually, it would have taken two weeks.”

Rapid response

As part of its modernization, TfGM decommissioned its on-premises operations management service and moved to [Azure Monitor](#). TfGM benefits from real-time alerts about its servers, services, disk space, and other elements. Monitor sends the alerts instantly to all designated TfGM employees via

[Microsoft Teams](#), which helps improve their responsiveness. They now can address issues quickly and efficiently to avert potential disaster events and keep transport services functioning smoothly—creating peace of mind for TfGM and Greater Manchester’s citizens.

“We’re providing a better service overall to the citizens of the region,” says Higgins. “A lot of that includes prevention facilitated by Microsoft Teams instant alerts and in-depth monitoring with Azure Monitor.”

In truth, TfGM has significantly expanded its monitoring capability. This includes hardware monitoring utilizing HPE tools and critical alerts auto-logging to HPE support teams. Use of [Azure Arc](#) and [Microsoft Defender for Servers](#) provides greater view into machine performance, application process maps, and security status—all of which improves visibility of service health.

“There are fewer issues because we’re proactively monitoring systems and communicating efficiently across the organization with Teams,” Higgins explains. “We’re solving problems before they even occur rather than dealing with them as they arise. That’s a depth to our alerting capabilities that we didn’t have before.”



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The analytics provided through Monitor help TfGM significantly reduce administration time and estate management. “Moving to Azure Stack HCI opens up opportunities for advanced analytics and gives us greater insight into the infrastructure going forward,” says Higgins.

Results driven and future ready

Throughout the three-year process of discovery, selection, and implementation, TfGM has worked closely with HPE and Microsoft to build a solution that meets its current and future needs.

“We had a lot of engagement with HPE and Microsoft throughout this project,” Higgins confirmed. “Together, we’ve been able to provide our organization with the reassurance that we’re going to get very good value by investing in leading-edge technology that will be current and relevant for years to come.”

“To enable Transport for Greater Manchester’s plans for the future—as well as Greater Manchester’s digital ambitions—it is important that we have firm technology foundations that we can build on,” adds Malcolm Lowe, Project Sponsor and Head of Information Systems at TfGM. “This work, which complements other technology changes we are making, is fundamental to ensure we can deliver outstanding transport services now and for the future of the region.”

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