

LONDON UNDERGROUND'S COMMUNICATIONS ARE BACK ON TRACK WITH SUPPORT FROM DAMOVO

In the summer of 2003 a major power outage highlighted shortcomings in London Underground's communications platform and processes and persuaded the organisation it was time to upgrade systems in its Main Power Control Centre (MPCC).

Damovo was selected to design, manage and support the new communications platform. The result is a communications infrastructure the London Underground can rely on every day as normal and in emergency situations when, for example, power to the track needs to be turned off.

Callers to the MPCC no longer receive a busy tone if a Power Controller is on the phone, enabling the centre to handle more calls and, more importantly, prioritise incoming calls during emergencies. The improvements in response times also mean that engineers working on the track during the night when the power is turned off (between 1.00am and 4.30am) can start work earlier, resulting in additional operational benefits.

The new communications platform is also significantly more robust than the previous system. Ultimately, the new communications infrastructure means that should a power outage on the scale seen in 2003 occur again, the Underground system should be up and operational much faster.

Beneath the capital city

More than three million passenger journeys take place on London Underground each day and 500 peak trains traverse the underground network.

London was the first city in the world to boast an underground railway system when it opened in 1863. Now, London Underground is part of Transport for London and a Public Private Partnership (PPP) is in place between London Underground and private infrastructure companies, which maintains and renews the Tube's infrastructure.

London Underground Limited, which is responsible for running the trains, stations and control centres, employs more than 12,000 staff.

DAMOVO WAS SELECTED TO CREATE SOLUTION, MANAGE IMPLEMENTATION AND DELIVER SUPPORT

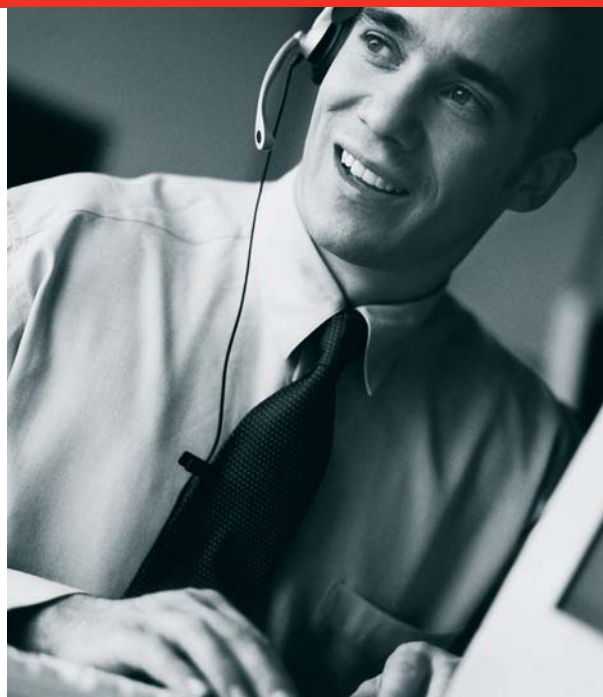
Improving London Underground's communications

During the commuter evening rush hour on August 28, 2003 a power outage in the South East of England left people in London and Kent without electricity and unable to travel home. The outage affected 60 per cent of the London Underground and most services were out of action until the next day. Although the fault lay with the electricity providers, a report from the London Assembly's Public Services Committee identified some weaknesses in London Underground's communications.

The Committee's recommendations suggested London Underground review how it communicated with each of its lines, how calls were prioritised and handled and how vital information was disseminated.

London Underground recognised that the existing communications system in its power control room – which manages the power for the trains and stations – was inadequate. Power Controllers relied on an IPC system, similar to the systems used by traders, and paper-based directories. What they needed was a complete power control room telephony system that would provide electronic directories and display information for users through a single Graphical User Interface (GUI) whilst itself remaining fully operational whatever the emergency.

The problem, points out Perry Roper, Power Control Room Engineer at London Underground, was that Power Controllers couldn't see who was calling. ***"We had one number in and instead of a queuing system, callers would simply receive the engaged tone if we were on the phone,"*** he explains. ***"So during a complete power outage we were quite blind to how many people were ringing us and could not prioritise calls. That's why we decided to look for a new solution."***



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Giving power back to London Underground

London Underground was required to hold an open tender and sent out a copy of the design specification – detailing the organisation's technical and business requirements – to any interested parties.

Four vendors pitched for the contract but Damovo, a leading provider of effective business communications, was selected to create a solution design, manage the implementation and deliver future support for the solution. ***"The support we had received from Damovo in the past was very good,"*** notes Roper.

...THE CHALLENGE LAY IN PROVIDING A CONSTANT SERVICE DURING SWITCHOVER

Damovo oversaw the implementation of an Ericsson MD110 communications system, Northgate CallTouch PC-based system, HP servers and PCs, NICE voice recording system, and discreet power on Chloride UPS (this allows everything to continue to function even if power to the building fails). Systems were installed at both the Main Power Control Centre (MPCC) and Emergency Power Control Centre (EPCC). As its name suggests, the latter provides a back-up power resource in the event of power failure at the MPCC.

Damovo conducted weekly meetings with London Underground's communications team during the early stages of the project to ensure that all parties were up-to-date with progress. **"There was a lot of work going on behind the scenes, as a lot of equipment had to be integrated between here and our fallback centre, which Damovo handled well,"** reports Roper.

The challenge in rolling out the new communications solution lay in providing a constant service during switchover. **"We're a 24x7 outfit (we even supply power on Christmas Day) so we had to have the old and new system running in tandem, which was something Damovo managed for us,"** recalls Roper.

The project took about 18 months to complete from start to finish. Damovo continues to support the communications infrastructure and has an SLA in place with London Underground to respond to any fault within two hours and fix it within four hours. **"The support we've received has been very limited – not because Damovo has let us down but because we haven't had that many faults!"** says Roper.

This is because the power control centre systems have been built with resilience in mind and a lot of redundancy has been installed, so every desk manned by a Power Controller has a spare PC and space for a second person, for example, should any problems occur. **"The communications are seamless at the EPCC as well,"** notes Roper. **"We spend time there each month and once a**



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Controller switches on the screen, no-one knows that they are not based in the MPCC."

He is particularly impressed by the Northgate CallTouch PC-based system, which is also used by many police forces across the country. **"The front-end is very user-friendly, as is the directory behind it,"** he says.

Responding faster in times of need

"What we've achieved from the system so far has surpassed my expectations," continues Roper. **"We have had much better response times from our system and now we're able to see who's calling us."** The system offers priority stacking of calls, so if a Power Controller is on a routine call, for instance, as soon as an emergency call comes in requiring the MPCC to shut down power to the track, the Power Controller can see that call immediately and is even alerted by a different sound.

VOICE RECORDING IS NOW INTEGRAL TO THE TELEPHONE SYSTEM

“Anyone ringing us now never receives an engaged tone, so we have definitely seen an increase in calls coming into the MPCC,” says Roper. *“We are able to manage our calls better as well – we can pick and choose which calls take priority, which we couldn’t do before.”*

Another new feature of the system is instant playback of calls – calls could be replayed before, but it was not a quick process. Railway law stipulates that all calls from operational telephones on the network have to be recorded in case any incidents occur. So, whilst the London Underground’s MPCC offered this feature before, says Roper, *“the interface was slow and cumbersome, whereas now the voice recording is integral to the telephone system.”* Another automated feature is the move from paper-based to electronic directories – offering savings on printing costs and helping Power Controllers locate the person they need faster.

“Some of the features that really stand out for me are the speed dials, which we can also configure; being able to transfer the system to any desk, which again we couldn’t do before; and other things, for example, you can turn the ringer off and after five minutes it comes back on again,” says Roper. *“So from an operational point of view the new system is far superior.”*

The improvements in response times also mean that engineers working on the track during the night when the power is turned off (between 1.00am and 4.30am) can start work earlier. *“Before it took quite some time to turn all the power off, but now we can give engineers access to the track faster, so we can offer much better customer service,”* notes Roper.

From a management perspective, operations are no longer fragmented around the business – instead everything is centralised in the MPCC and backed up in the EPCC – making it easier for Roper and his controllers to manage. *“Before we had a remote exchange for London Underground as well,”* says Roper. *“With the MD110 we have our own exchange, which is a*

vast improvement because it is faster and on site. If there is a fault it is easier for a telephone engineer to rectify it, as all the equipment is located in one place; whereas before a telephone engineer would travel up here and if he couldn’t find the fault here, he’d have to travel to the telephone exchange off site. Now everything’s located under one umbrella.”

Of great importance to London Underground was the resilience and robustness of its communications – it did not want a repeat of the incident in 2003. *“Now we have two pods on every desk for resilience purposes,”* says Roper. *“This can accommodate two people in times of real dire emergencies but we also looked at the human factors as well, so Power Controllers can use either pod depending on whether they are*

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SHOULD POWER OUTAGE OCCUR AGAIN, THE UNDERGROUND WILL BE OPERATIONAL FAR FASTER

left or right-handed!" There is also battery back up, so if the power fails the MPCC still has full resilience and, as an extra precaution, the EPCC is live all the time.

Given that London Underground partly took the decision to upgrade its communications because its previous system had been proven to be inadequate in an emergency situation, cost efficiencies were not seen as high priority. That said, there have been some associated cost savings with the new communications platform, which can now be invested in improving other areas of the business. **"There will be a reduction in maintenance and support costs, as we haven't had any faults on the system,"** notes Roper. **"Another cost saving comes from being able to let engineers onto the track faster during the night."**

Further Improvements

Roper and his team plan to make further improvements to the Power Control Centre on an ad hoc basis. **"We want to add DECT phones to the system because the duty manager needs to be mobile,"** says Roper. **"This will enable us to be more flexible and work from any desk during an incident without losing communications."** He also plans to make minor upgrades at the Northgate front end.

Ultimately, the new system means that should a power outage on the scale seen in the 2003 occur again, the Underground system should be up and operational much faster. **"We take on 500,000 operations a year (an operation could be a request to switch off power) and now all our operations are backed up by our communications, so from a management point of view, the situation is far, far better,"** sums up Roper.



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