

Left in the dark

di Lawrence Freedman

One of the distinguishing features of modern warfare is the connectivity expected on the battlefield. Commanders watch multiple screens containing the latest information on the whereabouts of the enemy and the availability of units. They can identify targets for artillery and drones, transmit them to the operators, and then track the progress of strikes. Meanwhile ordinary smart phones have become invaluable tools of communication.

So important has this connectivity become that any loss is potentially catastrophic. Cutting it off is therefore a natural objective for an enemy. We currently have an unusual experiment underway on the front lines of the Russo-Ukraine War which will provide a test of the importance of this sort of connectivity and the ability of a force denied it to adapt.

Both sides have been using tens of thousands of Starlink terminals for their internet-based activity. The difference is that Ukraine's use was authorised while Russia's was not. Earlier this month Russia's terminals were turned off. It is still early days but already we can see some effects. This story also reveals something about Russia's approach to developing its military capabilities.

To add to the test Russian forces faced another blow, this time inflicted by their own government, when the Telegram messaging service upon which many relied for communications, was deliberately degraded, with slower downloads and intermittent connectivity. In this post I look at how these losses came about, what it tells us about the Russian military machine, and what has been reported about the immediate impact, including a developing Ukrainian counter-offensive.

Starlink

The Ukrainians have been urging Space X to cut off Russian access for some time. What seems to have made the difference [late last year was Russia mounting Starlink terminals](#) on top of their long-range drones. This offered a solution to a long standing problem. The Russians could attack fixed targets with deadly glide bombs but they had not found an effective way to attack mobile targets. The Ukrainians could still move troops and equipment by road and rail. Russian long-range drones used to attack military targets behind the front lines were also being detected and disabled by Ukrainian defenders. Last year Russia's formidable drone warfare unit [Rubicon hit upon the idea](#) of combining cheap Molniya-2 fixed-wing drones with Starlink antennas and additional engines and batteries, enabling them to hit targets 20 to 80 kilometers behind Ukrainian lines. Geran drones similarly equipped struck military targets and transport infrastructure, including trains. They were used to attack the Dnipro-Pokrovsk highway, vital for keeping Ukrainian forces in Donetsk supplied. [According to Oleksandr Kovalenko](#):

‘The adaptation of Starlink for kamikaze drones elevated Russian terror to a whole new level, because real-time control of the strike asset allowed operators not only to instantly change course, but to independently select targets.’

In late January Serhiy Beskrestnov, an electronic warfare expert working as a technical advisor to the Ukrainian Defence Ministry, alerted Mykhailo Federov, the Minister of Defence, to this development. His proposed solution was to get Space X, the company which owns Starlink, to agree that only registered, verified, and authorized terminals could be used in Ukrainian territory.

Elon Musk runs Space-X. He is not someone who has always been considered sympathetic to Ukraine's cause. Yet at the time of the full-scale invasion, he did make a vital contribution by providing terminals to Ukraine after Russia had blocked its links to the Viasat satellite communications network upon which it had been relying. But he then he developed his own ideas on how Ukraine should fight its war and the peace it should agree, and imposed limits on the ability of the Ukrainian armed forces to use Starlink in offensive operations. Once inside Russian territory they lost access.

Nonetheless when Federov, who had helpfully previously been digital minister, contacted Musk in early February, explaining how Space-X's technology was being used 'to terrorize the civilian population of Ukraine,' [Musk's response was decisive](#). Two measures were taken. First SpaceX enforced a speed limit for Starlink terminals in Ukraine. If a device exceeds 90 kilometers per hour for two minutes, it automatically reboots, effectively preventing it being used on high-speed attack drones. Second, an official 'whitelist' of registered users was drawn up. Any terminal not on the list was deactivated. By this means unregistered Starlink terminals operating in Ukraine were shut down. [Fedorov praised Musk](#) as 'a true champion of freedom and a true friend of the Ukrainian people.' The move did affect Ukrainian units who had been provided with the equipment by domestic donors, but they have a well-advertised route to get their terminals registered and working again.

How did Russia get in the position where its front-line communications were so dependent upon an American company? Starlink sales are banned in Russia. The terminals their forces are using in Ukraine were acquired on the black market or in third party states, often imported via Central Asia or the Middle East. This why Moscow was in no position to complain about Starlink's action. This has been going on since [at least late 2023](#). It is not that the Russian government was unaware of the risks of depending on a foreign system, but its attempts to develop its own low-altitude network of satellites to provide communications have been delayed or are still in development and yet to be deployed.

In January there were [reports](#) that the launch of the first batch of low-orbit broadband internet satellites under a project intended to rival Starlink had been postponed. Under the Rassvet (Dawn) project, 16 satellites, out of a planned 300, were scheduled to be launched in late 2025. This was [reported](#) last month to have been pushed back by the space agency Roscosmos to sometime this year. There were suggestions that the satellites have yet to be assembled. (In October, the head of key Roscosmos subsidiary Reshetnev Information Satellite Systems was [dismissed](#) amid criticism over slow progress in import substitution for satellite manufacturing.) All this makes the objective of a new network becoming commercially operational in 2027 look optimistic. If China had made more progress with its alternative to Starlink that might have been a

satisfactory option for Russia. But its programme has also encountered delays and is unlikely to be available until 2027.

So despite regular Russian boasts about how they are they at the cutting edge of modern military capabilities, they lack anything that begins to be comparable to Starlink, which has almost 9,500 satellites in low Earth orbit.

Without its own system, the Russian Ministry of Defence allowed their operational command and control system to become parasitic on smuggled terminals. This has been likened to using a neighbour's wi-fi for your own system only to get caught when the password gets changed. Another [analogy offered was](#):

‘like a delivery company that built its entire routing system on a single navigation app, only to see its account abruptly disabled and drivers forced back to paper maps while management scrambles to install a rival platform.’

In the absence of Starlink there are reports of units having to rely on paper maps and communicating using couriers carrying memory sticks. Other workarounds include networks of drones to transmit radio signals which is slower or else use old-fashioned radios and field telephones. [Meduza](#) notes that there are other high-speed Internet options.

‘Before Starlink, Russian command posts (especially those located near Ukrainian territories occupied back in 2014–2015) used civilian fiber-optic networks and extended them to frontline positions. They’ve also created radio repeater networks to extend communication ranges. Both sides use relay drones to extend UAV ranges. These communications systems are, of course, far less convenient and more labour-intensive than commercial satellite networks.’

The Russians are using these legacy systems but they know the downsides. Conventional radio communications are vulnerable to interception and electronic warfare (EW). Other alternatives such as Wi-Fi bridges and cellular networks are also less reliable and vulnerable to EW. According to one Ukrainian analyst:

‘Since Soviet times, there have been standardized manuals on organizing radio and wired communications. But no real substitute for Western technologies has been found. Russia’s navigation systems and communications assets are outdated, limited in scale,

and operationally cumbersome. Under a realistic scenario, restoring effective command and control could take months.’

One option apparently [under active consideration](#) is the Barazh-1 system, a balloon-based platform capable of carrying a 5G terminal into the stratosphere as a communications relay, and which can either hold its position or manoeuvre to a better one. In principle this would allow Russian units to communicate with forces further to their rear, where data could then be relayed to higher echelons through terrestrial networks. Barazh-1 would have the advantage of being built from domestic components, so it could be scaled up rapidly. But it also has obvious disadvantages: the platforms would have a far smaller footprint than a satellite; would need to be replaced regularly; could be affected by the weather; and, most of all, would be relatively easy to detect by Ukrainians and shot down.

One indication of Russian desperation has been attempts to persuade Ukrainian citizens to [register Starlink terminals](#) for them. They even tried targeting families of Ukrainian POWs, to blackmail them into proving authorisation, but Kyiv is able to control registration and promises severe penalties for anyone tempted to make easy money. According to the [Wall Street Journal](#):

‘Russians sought Ukrainians online to activate their Starlinks in return for small crypto payments. Ukrainian online activists said they took advantage. One group said Thursday it had tricked Russian servicemen by offering to activate their Starlinks for payments, but instead transferred the data it garnered on 2,420 terminals to Ukrainian authorities. The activists said they redirected thousands of dollars they received in the process to support the Ukrainian military.’

Telegram

While the Russian army in Ukraine has been trying to work out how to cope with the abrupt loss of Starlink, Moscow stepped in to prevent them using Telegram, a popular social media app. The reason for this has little to do with the military situation and more to do with politics. The authorities dislike Telegram because they cannot control it, unlike their preferred [alternative](#), Max. This is now being pre-installed on all new smartphones and tablets.

The reason given by Russia's telecommunications regulator Roskomnadzor for throttling Telegram was that it was breaking the law:

'Personal data is not protected, and there are no effective measures to counter fraud or the use of the messaging service for criminal and terrorist purposes.'

Telegram's founder, Pavel Durov, who lives in Dubai (having been arrested in France in 2024), insisted that the platform 'stands for freedom of speech and privacy, no matter the pressure.' Max, by contrast, is a 'state-controlled app built for surveillance and political censorship.' The best explanation is a developing anxiety about the state of public opinion, combined with admiration for China's 'Great Firewall' which allows the government to exercise control over the public's internet use and survey their activity. It is not only Telegram that the regulator wishes to shut down. For the same reason the regulator is also seeking to restrict WhatsApp.

The problem for the Kremlin is that Telegram is used not just by ordinary Russians but also by the elite and the military. When it was cut off there were soon [furious complaints from the front](#). One soldier wrote:

'The front is in shock. Starlinks are gone, now they're jamming Telegram too. How are we supposed to fight? With carrier pigeons?'

Another appeared in a video:

'I'm addressing Roskomnadzor. My call sign is DJ. I'm currently on combat duty. Telegram is our only channel of communication. Do not deprive us of it.'

The episode underscores the contradictions inside Putin's wartime system, while the Kremlin tightens its authoritarian control over the internet, even its most loyal war supporters are warning that those measures could weaken Russia's battlefield coordination. The mood of front-line forces would not have been helped by Kremlin spokesperson Dmitry [Peskov](#) insisting that he could not 'imagine' that Russian forces used Telegram or similar platforms for frontline communications. Other senior figures in Moscow were equally dismissive of their concerns. Such comments add to the belief among the military blogger community that senior officials have little idea about how the war is being fought.

Consequences - Telegram

[One example offered](#) of the impact of losing Telegram involved the time taken to get information from a drone to pass it on to fire teams to attack the target:

‘A reconnaissance drone spots a moving target and relays the data to operational officers within a minute. Without Telegram, that same information must travel through internal military chain of command and control — first to a unit commander, then to an intelligence command post, then onward to other units for fire missions, and back again through the same chain.

That can take several hours, yet the information has lost its relevance after 10-15 minutes, and so any strikes are pointless.

‘To a significant degree, this will roll us back several years — approximately to the beginning of the war. Alternative methods are already being developed, but restoring effective coordination will take a long time.’

The disruptive impact of Telegram may be less inside Ukraine than inside Russia. [Giorgi Revishvili](#) quotes the Russian military associated channel *Voenny Obozrevatel* stating that Telegram was the:

‘only functioning means of communication and situational awareness for Russian mobile air defence units tasked with protecting the country’s airspace from long-range Ukrainian kamikaze drones.’

Another quoted source reports that it would not be prudent for him to use the monitored Max to transmit information drawn from his radar screen:

‘because the Service for the Protection of State Secrets in the Armed Forces (ZGT), the Internal Security Department (OSB), and other oversight bodies would inevitably come knocking afterward.’

Elsewhere, a serviceman complains that the restrictions on Telegram make it harder to coordinate efforts against UAV threats. They were disrupting a communications system that was ‘established with great difficulty.’

Revishvili also notes that Telegram has:

‘been widely used by Russian volunteer networks to mobilize support, coordinate activities, and rapidly raise funds for specific causes, including assistance for units deployed in the war.’

But he adds that Ukrainian intelligence services have also relied on Telegram to:

‘monitor Russian movements, conduct battle damage assessments, and identify potential targets. Russian channels, chats, and volunteer reports have often provided near-real-time information that could be aggregated and analyzed.’

Which is presumably one of Moscow’s objections to its widespread use.

Consequences - Starlink

The loss of access to Starlink without an obvious early replacement is much more serious than the loss of Telegram. If the effects of the restrictions on Telegram are too dire they can be reversed. But the loss of Starlink has been described by [Beskrestnov, Federov’s technical advisor](#), as a ‘catastrophe’ for Russia. ‘Their entire command-and-control system has collapsed. In many sectors, assault actions have been halted.’ Troops have been left without targeting data, artillery coordination, and reliable identification of friendly versus opposing forces. Other sources describe the problems of using electronic warfare systems when they interfere with Russian radios. In the Zaporizhzhia sector a breakdown in communications reportedly resulted in a friendly fire episode, with a 12-person assault group destroyed by its own side.

According to Viktor Taran, head of the Kruk UAV Operator Training Center:

‘Russian troops are nearly blind — they cannot see what is happening on the battlefield. As a result, their attacks become less effective and their losses increase. Ukraine, by contrast, regains strategic initiative and can make decisions faster.’

According to Ukraine’s general staff:

‘In the week following Musk’s Starlink access denial to Kremlin forces Russian ground attacks along with artillery air strikes against Ukrainian positions fell by between twenty and thirty percent depending on the day ... the shut-down of Telegram for most Russian users had little effect on Kremlin combat operations.’

[One calculation is](#) that Russian drone strikes were reduced by about 15 percent. In the week after losing Starlink combat clashes averaged 130-160 attacks a day, less than the

180-200 daily attacks, with peaks of 230-250 engagements, that has been typical since the Kremlin launched a winter offensive aiming to gain ground in selected sectors across the 1,100-kilometer fighting front. Ukraine was able to take advantage to evacuate the wounded and rotate personnel who had been stuck in their positions for months.

Most importantly it was able to mount counterattacks in the Hulyaipole axis, with a number of villages recaptured and Russians abandoning positions held since last year.

[According to the Kyiv Post:](#)

Both Russian and Ukrainian sources confirmed that the US company SpaceX's move to disable black and grey market Starlink communications terminals in Russia and Ukraine substantially aided the AFU attacks. The denial of Starlink service left Russian units in the Ukrainian attack zone largely unable to exchange digital data and reliant on easily jammed VHF radio for combat intelligence and orders.

The shutdown also disabled Russian-operated Unmanned Ground Vehicles (UGV), forcing Russian logistics troops to turn to manned automobiles, motorcycles or quad-cycle vehicles highly vulnerable to drone strikes to deliver food and ammunition for frontline troops, and to evacuate casualties.

An amount of territory comparable to that taken monthly by Russian forces over the past year (and with far fewer casualties) has been liberated. The gains have been in areas where there has been a low density of Russian forces and the big tests for a counter-offensive have yet to come. It is also important to note that while this has been going on fighting has continued along the front, and the last stages of the long defence of Pokrovsk and its sister city Myrnohrad have been reached.

True to form the Russian authorities denied any retreat though this was contradicted by military bloggers. The reasonably reliable Russia war blog Rybar acknowledged that: 'A difficult situation is developing... Earlier there were raiding operations, now the enemy is acting more massively, and locals report a high concentration of [Ukrainian] artillery. On the western flank, there are clashes on the banks of the Haichur River.

The main challenge, as always, lies in sustaining these gains given Russia's strengths in drones and artillery, and Ukraine's own shortage of reserves to exploit tactical successes. So it is too early to be sure what is going on here. It confirms that in sparsely

defended areas it is possible to take a substantial amount of territory. The main advantage claimed for the move is that it stopped an offensive that had looked promising for Moscow, allowing the Ukrainians to stabilise the front, and prepare better defences for the anticipated Russian spring offensive. According to the Ukrainian analyst [Kostyantyn Mashovets](#) the real gain lies in disrupting Russia's timeline for a hypothetical Orikhiv-Zaporizhzhia offensive operation. The Russians had been struggling to reach the staging positions for this offensive but now they have been forced off their positions.

So the early answer to the question of how well the Russians can cope with the loss of connectivity is 'not very well'. But it is less than two weeks after Russian forces lost access to Starlink, and in the past they have shown themselves able to adapt to new circumstances. We will therefore have to wait before a full assessment of its impact on the operational situation and whether it turns out to be a game-changer. For now we can say that at least this is a complication that the Russian military could have well done without.