

CASE STUDY

MODERNIZING F-22 SOFTWARE UPDATES WITH UDS FLEET

Defense Unicorns

UDS ENABLES FAST AND EFFICIENT SOFTWARE UPDATES AT THE EDGE



SLASH UPDATE TIME AND COST:

Software updates that once required a full maintenance crew, hangar space, and days of work can now be done in minutes by the pilot using their flight tablet.



ENABLE RAPID FLY-FIX-FLY CYCLES:

Teams can fly a test mission, identify an issue, and have a software fix built and deployed by the next flight, dramatically accelerating development and operational readiness.



SIMPLIFY THE USER EXPERIENCE:

Learning to manage software updates in disconnected, tactical edge environments with UDS Fleet takes less than five minutes of training, no IT background required, so any member of a maintenance team or aircrew can do it.

THE CHALLENGE

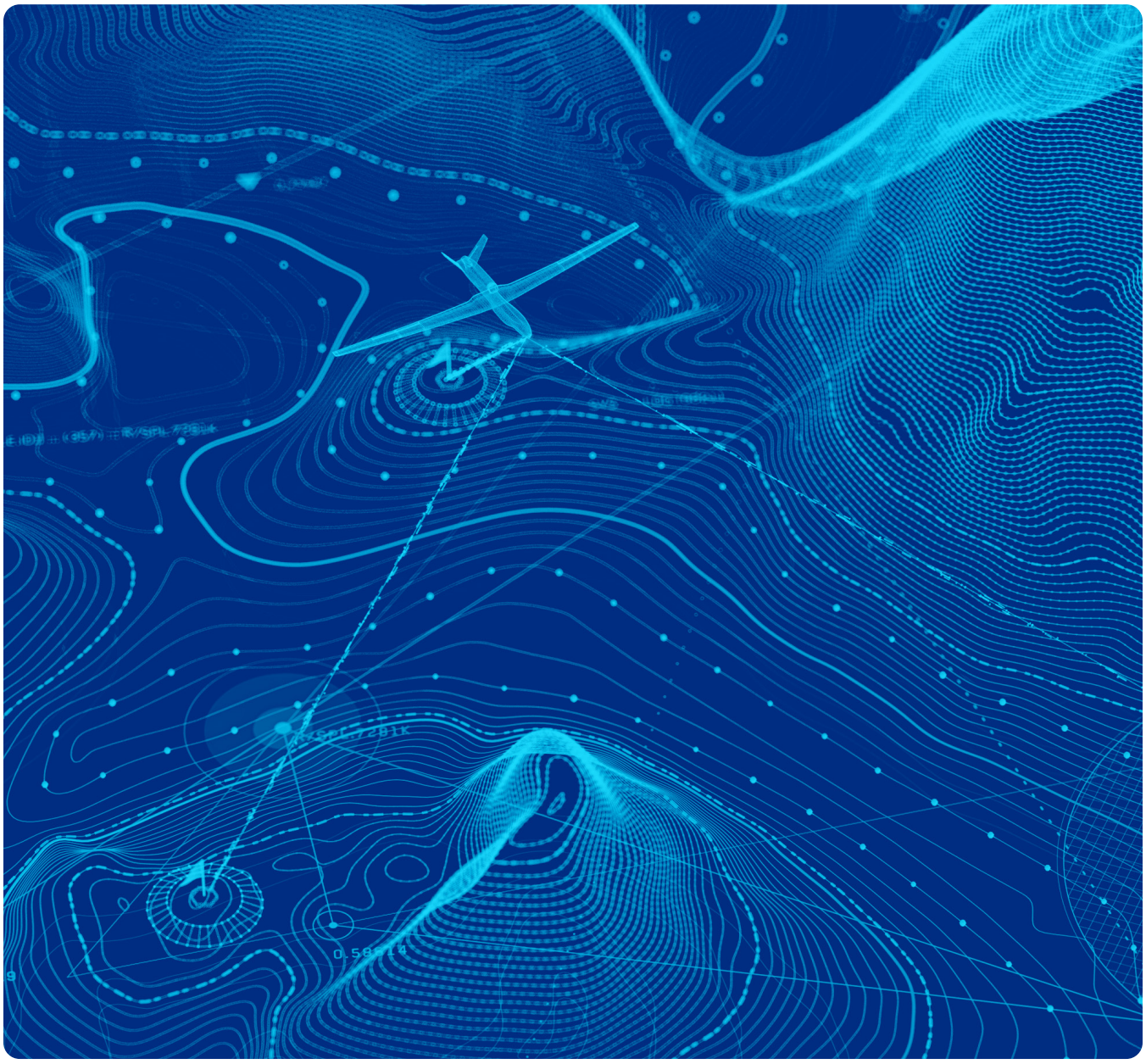
Keeping mission-critical software on advanced fighter aircraft like the F-22 up to date has traditionally been a labor-intensive, time-consuming process. Every software update required a rigid, multi-step maintenance workflow: ground the aircraft, move it into a hangar, have maintenance personnel remove panels to extract the onboard computer, transport the card to a lab for the update, test it in a controlled environment, reinstall it, and then conduct full ground and flight tests to verify the new software.

If a problem was discovered at any point, the entire process had to start over. A single update cycle could stretch across days and consume significant resources, including hangar time, ground power, external cooling systems, software engineers, a full maintenance crew, and a pilot. Bringing all of these elements together at the same time and place was a significant operational and logistical burden.

THE SOLUTION

UDS Fleet fundamentally changes how software updates are delivered to the aircraft. A remote agent running on the aircraft's mission system is paired with a tablet-based interface that lets authorized users push and manage software deployments directly, without ever touching the aircraft's hardware.

As software engineers develop updates, they can push those packages to a forward-deployed registry located in-theater at the edge. A pilot or maintenance technician on the flight line can then pull that update down using an intuitive tablet interface that requires no IT expertise. Updates can be performed on the ground or in flight, and the solution is designed to operate in disconnected, low-bandwidth environments at the tactical edge.



THE RESULTS

The initial implementation targeted a key onboard compute card and delivered immediate, measurable impact. What previously took days now takes a fraction of the time.

Most significantly, the solution has compressed the software testing cycle in ways that were previously impossible. Teams can now truly “Fly-Fix-Fly”: push a software update, fly with it, identify an issue, push a fix, and fly again. And, this can occur within hours rather than days or weeks. This dramatically accelerates both development velocity and operational readiness.

The resource savings are equally significant. What once required an entire depot-level maintenance environment – including hangar space, ground support equipment, a full crew, and coordinated scheduling across multiple specialties – can now be handled by a single software engineer working remotely and a pilot or greensuit maintainer on-site with a tablet.



BROADER APPLICABILITY

While this deployment focused on the F-22, the same capability addresses a wide class of challenges wherever software needs to be managed at the edge. Any platform or system that operates in a disconnected environment and requires periodic software updates without the luxury of a robust IT infrastructure nearby stands to benefit. UDS simplifies how teams deploy and manage applications on disconnected systems, reducing both the technical barrier and the logistical overhead that have historically made edge software management difficult.

ABOUT US

Defense Unicorns is a veteran-owned defense technology company founded in 2021 by Rob Slaughter, Jeff McCoy, and Andrew Greene to make software a strategic deterrent for the U.S. Department of War. The company builds open-source, airgap-native technologies that enable the secure development, delivery, and sustainment of mission software across cloud, on-premises, and tactical edge environments. Defense Unicorns' technology is trusted by the operators of some of the most critical systems in the world, including the U.S. Navy, Army, Air Force, and Space Force. Learn more at https://defenseunicorns.com.

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