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Automation Dramatically Shortens Intelligence System Update Cycle

ABERDEEN PROVING GROUND, Md. – On the 21st century battlefield, American Soldiers rely on timely, relevant and accurate information to understand their operating environment, assess threats and achieve their missions. The Distributed Common Ground System-Army (DCGS-A) is the Army's intelligence processing operating system, and it is one of the most critical tools in their arsenal.

DCGS-A consolidates the functions of multiple intelligence, surveillance, reconnaissance, geospatial and weather systems in a secure, distributed and collaborative environment. But as a complex system of systems, it faced major challenges.

Installing new software versions required extensive human intervention, including hundreds of pages of installation steps and thousands of keystrokes. This resulted in inconsistent loading processes. Moreover, troubleshooting errors was difficult, because each Field Service Representative (FSR) performed installations manually based on his or her individual knowledge and skills.

In fact, a typical software upgrade took 96 to 120 hours for each server. And with more than 1,500 active Army, Special Operational Forces, National Guard and Army Reserve units operating DCGS-A, issuing a new software release typically took four to five years.

"These difficulties of updating DCGS-A were hampering readiness and situational awareness for Soldiers that depend on the latest software to empower them to fight and win," said Russ Williams, chief of the U.S. Army Communications-Electronics Command Software Engineering Center Intelligence Support Division (ISD). "So the ISD took the challenge head on."

In 2018, ISD began automating the bulk of the instructions through tools and scripts that turned manual tasks into computer processes. Using orchestration, ISD then converted these tools and scripts into a contiguous procedure.

In March 2019, ISD released its automation appliance into the DCGS-A Increment 1, Release 1 baseline, reducing the overall installation time to just four hours. The automation appliance makes software installation consistent, provides cost savings, and reduces errors with deployment and patching. It also simplifies the installation so that unit personnel can perform the upgrade themselves, without depending on FSRs.

As part of the deployment, ISD created a new automation server that serves as the host for all of the software and services that deliver the solution. The server provides the underlying framework for automating complex configuration procedures, reducing the manual effort required.

"Our leadership has challenged us to move much faster as our Army modernizes to face near-peer threats," said Williams. "Bringing DCGS-A software update times down to only four hours was an extraordinary effort that not only better protects and enables Soldiers, but also has major benefits for American taxpayers."

Cyber security was a key consideration during the process of creating and deploying the automation appliance. As part of its security impact assessment, ISD is releasing monthly information assurance vulnerability alert patches to protect the automation appliance from the latest threats. It is also evaluating how to implement the automation appliance function into newer DCGS-A configurations.

