AFRL

THE AIR FORCE RESEARCH LABORATORY

THE INTEGRATED WARFIGHTING NETWORK: EDGE CONNECT

DELIVERING WARFIGHTERS MORE ROBUST AND RELIABLE COMMUNICATIONS IN THE FIELD

The Integrated Warfighting Network (IWN) is a technical architecture developed by the DAF Chief Architect's Office (CAO) and partners to enable secure, flexible, robust, and resilient communications at the tactical edge and across the enterprise for the USAF and USSF.

IWN answers the Secretary of the Air Force's Operational Imperatives to strengthen the digital infrastructure and minimize stove-piped networks.

The first implementation of the IWN architecture – Edge Connect – was tested as part of the Valiant Shield 22 exercises held in the Pacific in May and June 2022.

Pacific Air Forces (PACAF) identified key beyond-line-of sight communications problems that significantly hindered the command's ability to execute Agile Combat Employment (ACE). These challenges included low bandwidth, lack of resiliency, and single points of failure.

The CAO and PACAF partnered to deploy an architectural minimum viable product (MVP) for tactical communications, called Edge Connect as part of Valiant Shield 22. Edge Connect provided critical beyond-line-of-sight connectivity for data transport and command and control, addressing the key PACAF challenges.

During Valiant Shield 22, Edge Connect demonstrated the capability and military utility provided by the IWN architecture, delivering improved communications resilience and bandwidth, enabling distributed operations in the Pacific.

The Integrated Warfighting Network offers a unique capability leveraging commercial communications ubiquitous fabric to augment traditional military systems delivering the necessary communications architecture required for Joint All Domain Command and Control (JADC2) and Agile Combat Employment.

CAPABILITIES PROVIDED BY EDGE CONNECT

- Establishes a flexible, robust, resilient Software-Defined Wide Area Network.
- Improves overall network bandwidth and resiliency through the use of multiple commercial pathways (such as local cellular and commercial satellite communications) combined with traditional military pathways.
- Affords operators the mobility necessary for ACE through handheld devices using commercial solutions for classified security to enable end-users' access to SIPR over unclassified wireless internet.

Edge Connect is set up on site at Palau International Airport during Valiant Shield 22. (U.S. Air Force photo by Senior Airman Jose Miguel T. Tamondong)