

Cyber Foraging Use Cases

Enabling Agile, Unified Data Fabric for Disconnected/Disadvantaged Environments

VCINITY DELIVERS

- Expedient data staging at the tactical edge with dramatically reduced data transfer times for rapid, more accurate decision-making ability by leadership
- Reach-in ability to process large datasets (such as 3D data imagery captured during mission) in-place without needing to move them
- Edge Nodes in sync with the enterprise during DIL mission operations
- Easier handoff with unified reachability of fixed and mobile cloudlets
- Compact form factor and power efficient solutions for mobile environments
- Seamless integration into existing mobile compute environments with flexible hardware-software and software-only solutions

Challenges:

Cyber foraging leverages cloud compute or local server surrogates (or edge nodes) to support computation offload and data staging for mobile devices at the tactical edge. The proposed 3-tier architecture of cloud/command center—edge node—mobile devices provides a platform for compute intensive applications in disconnected and disadvantaged environments. The deployment and survivability of this architecture are critical to mission success in spite of the challenges in tactical environments. The intermittent cloud-enterprise connectivity poses the primary challenge to prepare the edge nodes or cloudlets for deployment or to keep them in sync with the enterprise, i.e., the command center, private/public cloud or on-prem infrastructure. Existing protocols support limited data transfer ability and utilization of the available connectivity resulting in reduced agility of the edge node-based architecture. Mobility, battery power, dynamic nature of missions and ever-varying technical skills in theater pose additional challenges to the realization of a survivable architecture necessary for mission success.

The Vcinity Solution:

Vcinity's Ultimate X™ (ULT X) solution empowers the edge node-based architecture to overcome the above challenges and enable two critical use cases:

- Transferring data from command center/cloud to the edge node for data pre-staging and caching at the tactical edge
- Reach in to process data in-place immediately where it is stored or transfer data between edge node and command center/cloud during mission operations i.e. in the event of loss of connectivity, mission completion or data uploading

Vcinity's technology and holistic approach optimizes compute, storage and network infrastructure by enabling access to data without needing to move it at all. It transfers data only if and when the use case demands it, thereby reducing copy sprawl and enhancing data security. Unlike conventional solutions, it does not pre-process or alter data, so complete integrity of the source data is maintained. ULT X also delivers predictable performance independent of data volume, variety and distance.

Vcinity’s solution addresses the survivability challenges with:

- Rapid and accurate application execution on remote data through memory to memory data transfers over high latency connections
- Maximum (95+%) end-to-end utilization of the intermittent edge node-enterprise connectivity resulting in more data transferred in less time
- Support for ANY connectivity available in the architecture—Dedicated, Internet, WIFI, or Satellite
- Enhanced mobility with small form factor, power efficient hardware (ULT X-1000e in PCIe slot) or software-only (ULT X-1000v) solution suitable for any virtual environment
- Seamless integration into the existing compute and application environment—no client software or in-theater training required
- Industry-standard APIs to integrate into existing automated workflows

