

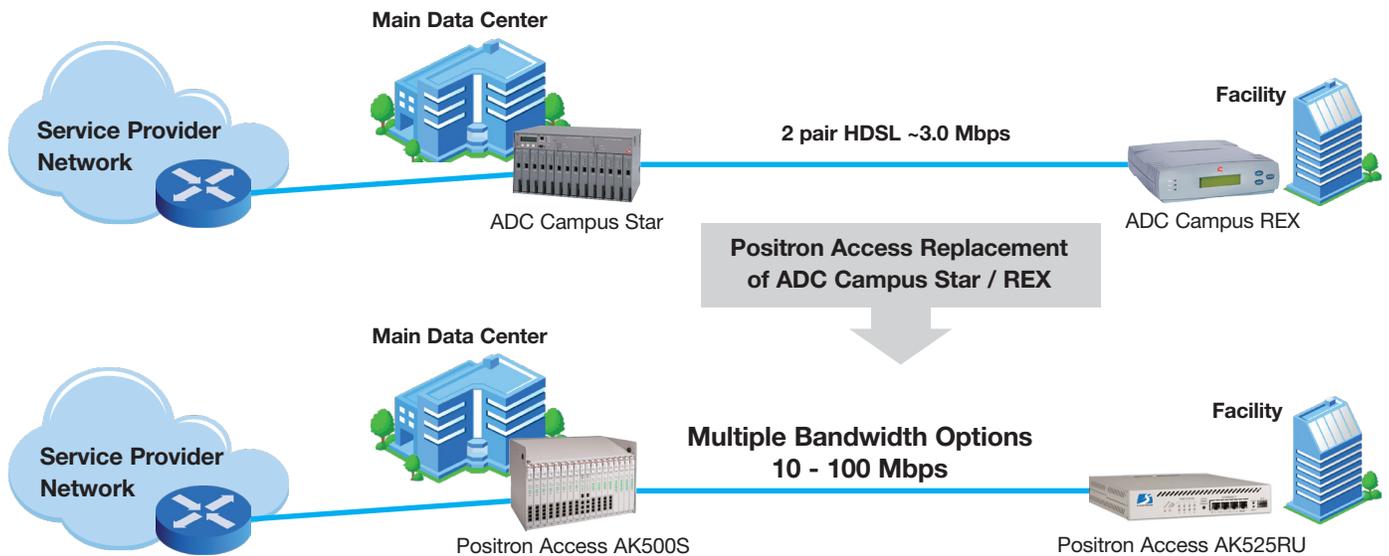


## Delivering On-base Broadband Services without Costly Fiber Deployments

The importance of deploying effective communications technology infrastructure on military bases carries an exceptional level of importance. This is well understood and embraced throughout the military and results in state of the art and mission critical systems being deployed broadly. The expense of these systems coupled with the funding challenges that are facing every branch of the military results in some deployed communications facing severe limitations. Data communications between on-base facilities is an example where 1990s solutions are being maintained while affordable options with dramatic performance improvements exist.

An apparently simple solution to this challenge would be to aggressively deploy fiber on every base. Unfortunately, this approach is entirely impractical. The cost of the approach coupled with challenges on many bases in being allowed to trench for new fiber links requires more practical alternatives. Further, in many cases the throughput requirements do not require the Gigabit-or more capacity fiber provides. What is needed is the ability to consistently deliver 10-100 Mbps for a multitude of control and monitoring applications. In a large number of bases, the communication infrastructure for these applications is based on the PairGain Campus solution (circa 1990). Over the years the PairGain solution was rebranded as ADC and then ultimately sold to TE Connectivity which is now in the process of discontinuing the solution.

Fortunately Positron Access has a solution that leverages the existing copper infrastructure while delivering 25X performance over what is possible with the old Campus products.



**Figure 1: Positron Access Replacement Solution**

Positron Access has a range of solutions that can delivery vastly superior performance when compared to the PairGain Campus solution. At 7,500 feet, the AK525 series delivers 15.2 Mbps per copper pair on up to 8 pairs (100 Mbps downstream/ 10 Mbps upstream or 40 Mbps symmetrical). This performance can be extended further with Positron's AK355 which can bond 16 pairs and provide 100 Mpbs performance at 13,000 feet (100 Mbps downstream/ 20 Mbps upstream or 45 Mbps symmetrical). Regeneration options also exist with the AK355 which further extend its reach.

The AK525 and AK355 both leverage patented DMT+MIMO technology that provides a number of performance and reliability enhancements over other Ethernet bonded copper solutions. Of key importance for military deployments is the solution's ability to automatically rebalance the per-pair bandwidth allocation should pairs in the bundle fail. Performance impacts in this scenario are imperceptible.

## Application and Deployment Experience

There is a wide range of applications where the Positron Access solutions can replace data communication systems still using the PairGain Campus products. The subset of applications listed here represents both existing deployments and projects in process.

- **Fire Station Data Communications** – 45 Mbps symmetric service deployment between the central data center and the remote fire station
- **Remote Water Treatment Facilities** – 40 to 100 Mbps Asymmetric service being provided between the central data center and three separate water treatment facilities
- **Guard Stations** – 30 Mbps symmetric service being provided to card readers and remote surveillance requirements
- **Smart Grid** – Symmetric Ethernet service being provided to reach network nodes that can't be reached by fiber



The on-base IT teams are increasingly concerned by the performance limitations and compatibility issues being discovered as newer communication equipment are added to the network and are turning to Positron Access Solutions for state-of-the-art replacement of the antiquated Campus solution while preserving the existing copper infrastructure. This approach not only helps to contain costs, it saves a lot of time that would otherwise be required to properly plan and engineer a fiber build-out. The migration from the Campus products to the Positron Access AK525 or AK355 platforms can be done in days if not hours.

## Key Drivers for Replacement

Each deployment instance has its own set of motivations but there is a common set of factors that are driving the replacement of the PairGain Campus product and new installations of the Positron Access solutions.

- **Performance** – As highlighted previously significant (25X) throughput improvement can be achieved over the same copper infrastructure.
- **Reliability** – The Campus deployments are very old and are beginning to fail without replacement systems available. Without an aggressive sparing strategy in place facilities can be stranded with no data communication options if the Campus systems fail.
- **Incompatibility** – Compatibility issues with newer Ethernet switches and other devices are being uncovered impacting new projects, further aggravating the need for a better solution.

## Summary

Our interactions with base personnel to date have been very positive since Positron Access are proving an ideal and very cost effective solution to a critical issue; providing affordable high speed Ethernet connectivity to on-base locations over the existing copper facilities. References for prior deployments can be provided and contact information for the Positron Access military team is provided below.

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AK525 8-pair DMT+MIMO



AK355 16-pair DMT+MIMO