About ATPCO
Headquartered in Washington, D.C., with regional offices in London, Miami, and Singapore, Airline Tariff Publishing Company (ATPCO) collects, processes, and presents fare and fare-related data from more than 450 airlines worldwide. They distribute this data globally to online travel agencies, travel search and aggregator sites, and global distribution systems and their respective travel agencies, as well as to numerous computerized reservation services and airline web sites to support worldwide airline ticket sales.

ATPCO capitalizes on its 50 years of experience to design and build their world-class platform to enable high transaction capabilities, data distribution, and neutrality—driving solutions with lower costs, greater efficiency, and better accuracy.

The Challenges
Data Complexity
ATPCO services 99.8% of all intermediated fares worldwide with underlying data sets and processes of enormous complexity and volume. While presenting airfares for analysis may seem like a simple facet of ATPCO’s business, it is extremely complex. For example, a fare from Boston to Los Angeles can have billions of possible variations behind it, like other cities to route the flight through, pricing, promotions, seat choice, and restrictions.

To address this complexity and volume, ATPCO is building a new generation of fare analysis tools to enable their customers to stay competitive in the marketplace. Because of regular fare and related data updates, tens of millions of changes are made daily—and all must be written to persistent storage before they can be made available for analysis. “We have a huge amount of data constantly coming into our systems,” said Navid Abbassi, ATPCO’s Chief Architect of Information Technology Services, “and that data has to be online and available as quickly as possible to support global customers—all day, every day.”

Platform and Data Availability
Because ATPCO’s new fare analysis processes occur in memory, Abbassi said that it is imperative that their platforms enable seamless operation—even through the unlikely event of a server-level failure. To protect active data in the memory, ATPCO relies on high-bandwidth, persistent storage for critical system availability. “If a platform fails for any reason, the persistent storage must be able to load the data back into memory as quickly as possible,” he said.

Managing Near-Constant Change
ATPCO’s geography-driven query mix changes with the time of day while the entire data set (spanning geographies) resides on persistent storage. Abbassi said that when a platform’s geographical focus changes, the existing in-memory data is invalidated and replaced with data specific to the new geographical focus.

“…the better—so our customers can analyze our fare data, get their fares online quicker, and begin generating revenue with them. This cycle repeats regularly. The same is true for fare changes. The speed at which changes can be written to our persistent storage is crucial. We must complete the nonvolatile write first before the update can go live. These changes happen constantly.”

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Navid Abbassi
Chief Architect of Information Technology Services at ATPCO
Abbassi added, “Our systems have to manage every fare change while still servicing constant fare queries—we don’t slow down to accommodate the constant influx.”

Building a Growth Architecture
During their platform design process, ATPCO knew that they needed systems that supported very granular scaling—a build-as-you-grow approach. “Complex, shared storage systems just don’t give us extreme storage granularity; they don’t let us easily and quickly build out as we need to, which is critical for ATPCO,” Abbassi said.

The Solution
PCIe Flash in Dell Servers
ATPCO had several storage choices when designing their hardware platforms. “When we were looking at core system design, we looked at every storage option out there. We considered SANs, SANs with flash, large enterprise disk arrays, arrays with flash, server-side SATA and SAS SSDs … everything,” Abbassi said. Despite testing some of the best-known storage platform vendors, the vast majority of the products and systems did not offer what ATPCO needed.

“We ended up going with Micron’s P420m PCIe-based SSDs inside our Dell servers, which let us add what we want, when we want—easily and economically.” According to Abbassi, “We measured a 2X to 4X application-level improvement when using PCIe attached SSDs inside the server. Combined with the ability to scale on a per-server basis to ensure simplicity, ease of support, and granular scaling for easy build out, the solution was a clear win for us.”

Micron’s P420m PCIe Attached SSDs Prove Optimal
ATPCO next focused on finding the best overall value in PCIe-based SSDs. After thoroughly testing many available PCIe attached SSD options, they chose Micron’s P420m for several reasons: “It offered a broad range of driver support, and Micron showed us an SSD portfolio with a long-term focus and overall dedication to customer support. The P420m’s ease of use and stability, as well as overall value, was well-suited to our usage model and technology.”

ATPCO ran our detailed PCIe SSD analysis—focused on customer benefits versus cost—to choose Micron’s P420m.

The Results
“Our airline customers rely on our services for fare publication and competitive analysis. We have to be very nimble—yet stable and available. ATPCO and our toolsets help our customers optimize their offerings every day. Our travel service customers need up-to-the-moment accuracy,” Abbassi said, “and although ATPCO is a small “cog” in the very large airline travel “machine,” airlines and travel services alike depend on us for the most accurate, up-to-date fare information available from 99.8% of all intermediated fares worldwide for more than 450 airlines.”

This ever-changing environment requires back-end systems that respond very quickly and scale at the single-server level. A wide variety of storage options are available, and ATPCO considered all of them. “After all of our testing was done, it was clear: PCIe flash storage inside the server was the technology that would get us there. Working with Micron to deploy their P420m PCIe SSDs in our new fare analysis platform has been extremely fruitful, helping our technology reach its full potential.”
Fast Facts

**Customer**: ATPCO

**Industry**: Airfare Analysis

**Primary Contact**: Navid Abbassi, Chief Architect of Information Technology Services, ATPCO

**Challenges**: Deliver up-to-date, accurate fare information to the global travel industry from data sets that are increasingly complex, ever-growing, and constantly changing

**Solution**: ATPCO’s next-generation hardware platforms and Micron’s P420m PCIe SSDs in their Dell servers

**What Made the Difference**: The ease of use, stability, and scalability of Micron’s P420m PCIe SSDs

**Result**: ATPCO experienced a 2X to 4X application-level improvement when using Micron’s PCIe attached SSDs to ensure quicker availability of fare information—helping to make ATPCO’s customers more competitive