

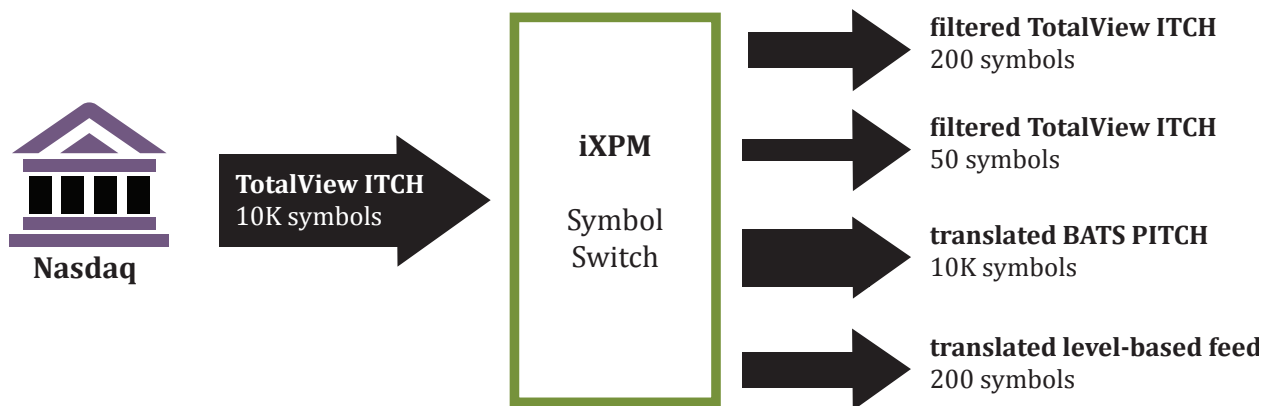
iXPM Symbol Switch™

THE INDUSTRY'S FIRST SYMBOL SWITCH

Overview

xCelor's iXPM is a Symbol Switch. It is a 32-port switch. It takes a native feed in, and allows the user to design custom output feeds. On a per-port basis, the user can choose:

- The symbols to be included in the output feed. This can be all of the symbols coming in or a subset.
- How updates on symbols should be allocated to multicast groups. This allows the user to break the feed up into multicast groups based on symbol. In other words, users can channelize (or re-channelize) the feed.
- The protocol of the output feed. The output feed can look exactly like Nasdaq, or exactly like BATS—or it can be a level-based feed where every tick is a full book on the wire, with periodic book refresh.



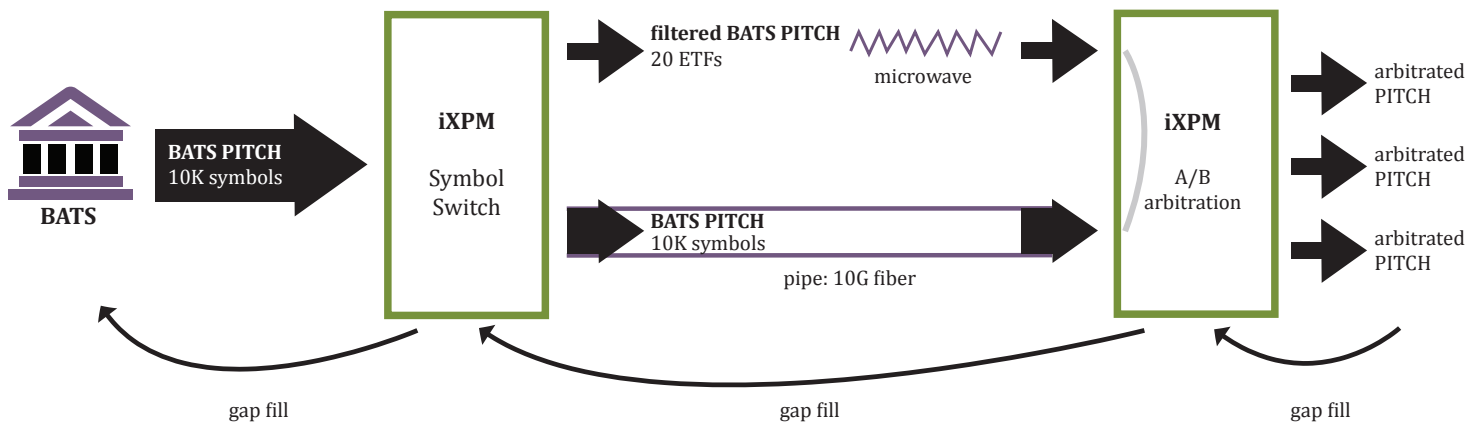
Use Cases

1. A native feed is delivered at Site A, but it also needs to be at Site Z. You need only 1,000 symbols. Native feed is 10G. Instead of building a 10G infrastructure between A and Z, use the xCelor Symbol Switch at A to filter down to 1,000 symbols and transport those to Site Z over a 1G infrastructure.

Use Cases (continued)

2. Native feed is delivered at Site A. You have 20 trading servers at Site A that need the feed. Each server needs a different subset of the full symbol universe. Currently, you use an expensive FPGA card in every server and Layer 1 replicate the full feed to each card. The FPGA is used because it can filter at the host at line-rate and reduce traffic downstream across the PCIe and kernel — improving determinism. Instead, use a Symbol Switch at Site A and output 20 custom feeds, one for each server. Each feed will only contain the symbols that each server needs. Filtering at the handoff means users can use kernel bypass cards on the hosts instead of FPGA, improving scalability.

3. A native BATS feed is delivered in NY5. While all the symbols are useful in Aurora, 20 actively-traded ETFs with high correlation to futures contracts are particularly useful. Use a Symbol Switch in NY5 to emit two feeds: the first will be with 20 ETFs; the second, is all symbols. Send feed one over RF. Send feed two over fiber. Use a Symbol Switch in Aurora configured with A/B arbitration. This Symbol Switch receives both the RF feed (50 ETFs) and the fiber feed (all). It outputs all symbols to local consumers in PITCH format. If a tick comes in faster over RF, the switch then delivers it to the local consumers. If this same tick is later received over fiber, this update is dropped by the Symbol Switch.



Product Technical Specs

PERFORMANCE

- Port-to-Port Latency for feed filtering and translation 500 ns to 1µs depending on input feed

SUPPORTED MEDIA

- 10Gbps fiber or passive-attached twinax copper

CONNECTIVITY

- 32 SFP+ ports
- Max Data Rate 10.3125 Gbps

POWER AND COOLING

- Input Voltage: 100-240V AC 47-63Hz

REMOTE MANAGEMENT

The xPort family can be configured and monitored through a command line interface (CLI), which is also available out-of-band.

Among other functions, the CLI permits:

- Configuration of input feed parameters
- Per-port configuration of output feed parameters: symbols, multicast group allocation and protocol.