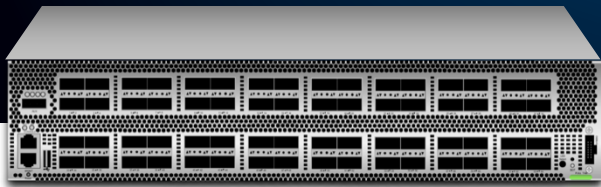


NoviBroker

SDN-based Packet Broker Functionality

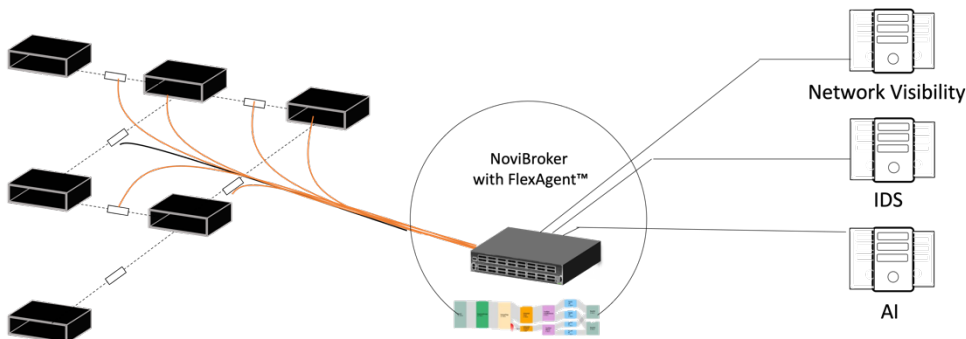


Highlights

- **Features the “FlowAgent” pipeline algorithm**, a next-generation SDN solution for mapping tap feeds to analytic tool clusters.
- **Multi-terabit throughput capacity** supports interfaces from 10G to 100G and up to 6.4Tbps throughput.
- **Competitive Price Point** leverage white-box hardware and flexible licensing options, with both perpetual or annual subscriptions available.
- **Easy to Use** with a shallow learning curve. This reduces ramp-up and deployment time as well as configuration and maintenance costs.
- **We do what other vendor won’t** when it comes to adding new features and functionality. NoviFlow’s use of highly programmable silicon translates to rapid feature development for our customers.

Traffic Aggregators and Network Packet Brokers are key components of monitoring and visibility toolsets. NoviBroker is a next generation solution for users looking to upgrade their traffic aggregator function to handle multiple terabits of throughput. NoviBroker is a cost-effective traffic aggregator with up to 6.4Tbps of throughput supporting interface speeds of 10G to 100G for maximum compatibility with existing network infrastructure.

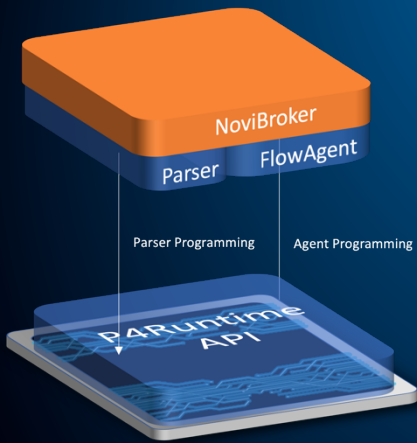
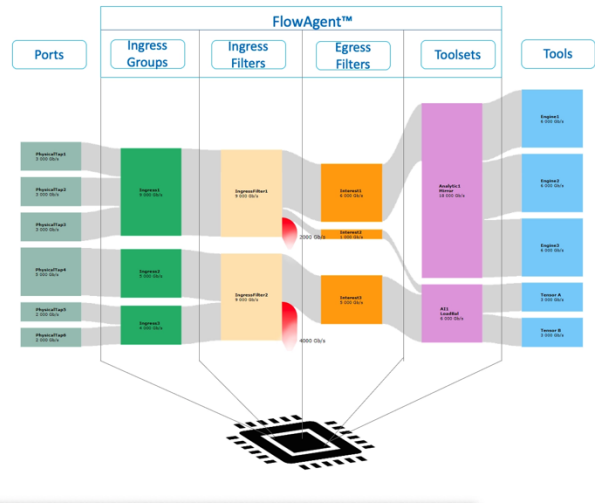
NoviBroker introduces a next generation SDN technology – the FlowAgent™ pipeline – that makes analytics engineers more productive by making the mapping of feeds to tools more intuitive and more powerful. This is done by breaking packet broker functionality across four stages in a pipeline, with each stage allowing a new set of filtering or aggregation capabilities. At each stage an agent can register to feeds from prior stage agent(s) to output individually crafted streams to tools. The configuration tools and APIs were designed around the user, not the underlying chip architecture, and using human readable objects, including the inner header of encapsulated packets. This removes the need to manually calculate bit-offsets frequently required in many competitive brokers.



NoviBroker with FlowAgent Pipeline

At the heart of the traffic aggregator is the FlowAgent pipeline which features fine grain control of setting up the streams of interest. With four separate stages, FlowAgent lets you create streams of interest that can be virtually wired into multiple stream aggregates.

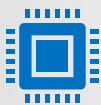
At the end of the FlowAgent pipeline is the “toolsets” agent which allows you to output to a single port, mirror to multiple ports or load balance across multiple visibility/security tools. Since not every tool can handle the same volume of traffic, weighted load balancing lets you specify the volume of traffic to be load balanced across each device.



SDN Approach to Packet Brokers from Silicon to Software

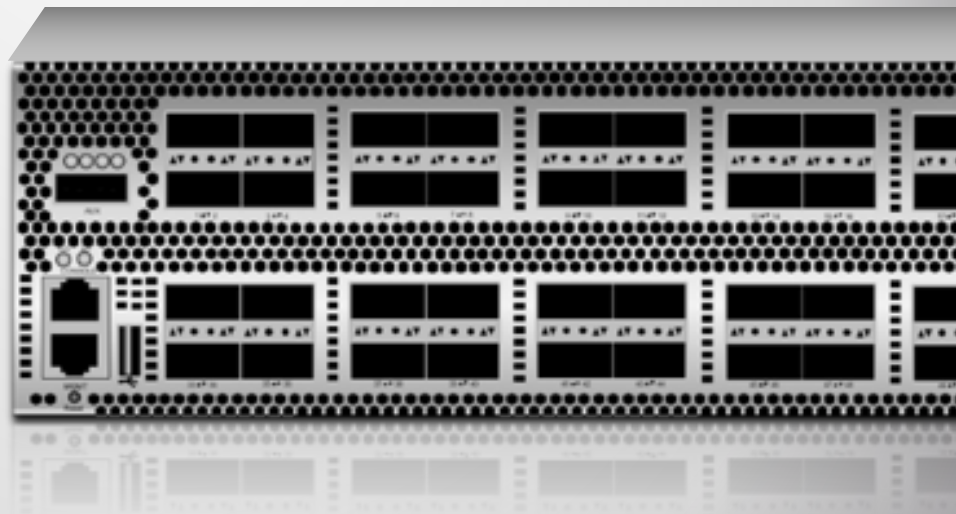
NoviBroker translates simple human readable configuration files or API calls into complex rule sets within the Tofino silicon. Users can create their own port groupings, manage streams within the pipeline and utilize output tools all executed in silicon at up to 6.4Tbps line-rate.

The programmable parser in the Tofino chip enables new features and protocols to be added at the speed of software development.



The power of programmable silicon in a white-box switch

NoviBroker is built on Tofino, the latest switching silicon from Intel. Tofino offers up to 6.4Tbps of core throughput and interfaces from 256 ports of 10G up to 64 ports of 100G. The hardware can be sourced directly with Edgecore or bundled with NoviFlow’s software. Flexible licensing options are available for NoviBroker including perpetual licenses and annual subscriptions.



Features and Benefits

| Feature | Benefit |
|---|--|
| <p>Multi-terabit throughput, flexible port configurations in a small footprint</p> <ul style="list-style-type: none"> • Up to 6.4Tbps non-blocking core switching • Supports a wide range of interface speeds, including 10G, 25G, 40G, 50G, 100G with QSFP and QSFP28 modules • 1U 32x100G (WB-5132) and 2U 64x100G (WB-5164) options | <ul style="list-style-type: none"> • Replace multiple existing traffic aggregators with a single NoviBroker, reducing cost, while also reducing the complexity of the TAP network <ul style="list-style-type: none"> ○ Supports up to 256 10G links • Support a wide range of media speeds from 10G to 100G for ultimate compatibility with existing TAP and SPAN ports • Compact footprint, utilizes less rack space and power consumption |
| <p>FlowAgent™ pipeline with multiple agents to map TAPs to Tools</p> <ul style="list-style-type: none"> • New Agent pipeline algorithm • 4 stage pipeline for flexible aggregations and filtering of the streams <ul style="list-style-type: none"> ○ Each stage allows a finer grain flow aggregation ○ Each stage can register to a stream output of a prior stage to create new aggregate interests ○ Filters by packet fields or packet shape (for example 2 MPLS tags) • Weighted Load balancing and mirroring of output traffic to tools with a tool set. | <ul style="list-style-type: none"> • Program the traffic aggregator in a human readable object-oriented environment, removing the need to calculate byte offsets to match a flow <ul style="list-style-type: none"> ○ Reduces the learning curve and time to deployment ○ Eliminates the cost of maintaining custom configurations and the expertise to create/edit them • Advanced parsing engine allows for outer and inner headers of encapsulated packets to be parsed • Multiple stages improves flexibility and enables reuse of the rules crafted earlier in the FlowAgent pipeline |
| <p>Easy to Use</p> <ul style="list-style-type: none"> • Configure aggregation streams using object-oriented Agents • Do not need to use complex bit-offsets to program “interests” • Supports both remote API calls and local CLI for pipeline configuration | <ul style="list-style-type: none"> • Lowers barriers to deployment • Reduces the need for special skillsets to program traffic aggregation • Program once when deployed or create dynamic orchestration of traffic flows to tools by using the north-bound API interface |
| <p>Competitive Price point</p> <ul style="list-style-type: none"> • Based on white-box OCP compliant hardware you can source through NoviFlow or your own supply channels • Perpetual and annual software licensing is available for the <i>NoviBroker</i> software | <ul style="list-style-type: none"> • Leverage products from a leader in commercial-off-the shelf white box hardware, Edgework • Flexible software licensing allows you to select the best way to deploy, with a perpetual license or annual licensing |
| <p>We can do what your current vendor won't</p> <ul style="list-style-type: none"> • Software Programmable Parser • Rapid response to customer requirements | <ul style="list-style-type: none"> • If you have a special requirement, contact NoviFlow, we can rapidly add support for new protocols and features |

Hardware

| | |
|--------------------------|--|
| Ports (Up to) | 32x 40/50/100G (WB-5132) / 64x 40/50/100G (WB-5164) 128x 10/25G (WB-5132) / 256x 10/25G (WB-5164) |
| Core Bandwidth | 3.2Tbps (WB-5132) / 6.4Tbps (WB-5164) |
| Rack Units | 1RU (WB-5132) / 2RU (WB-5164) |
| Power Input | WB-5164: AC: 100-127 VAC, 50-60Hz, 11A; 200-240 VAC, 50-60Hz, 6A DC Input: 200-300 VDC, 6A WB-5132: AC: 100-240 VA, 50-60Hz, 3A to 8A 200-300 VDC, 4A |
| Power Consumption | WB-5164: 1100W WB-5132: 512W |
| Fan and PSU | Fans: Hot-swappable and accessible on rear panel, 4+1 for Redundancy: WB-5132 and 9+1 for WB-5164 PSUs: 2 redundant, load-sharing, hot-swappable AC/DC |
| Temperature | Operating: 5°C to 45°C (41°F to 113°F) Storage: -40°C to 70°C (-40°F to 158°F) |
| Weight | WB-5164: 20.4 kg (45 lb) WB-5132: 9.8 kg (21.61 lb) |
| Dimensions | WB-5164: 440 x 507 x 89 mm (17.32 x 19.97 x 3.50 inches) WB-5132: 440 x 507 x 44 mm (17.32 x 19.97 x 1.73 inches) |

Ordering Information

NoviBroker with WB-5164 64x100G Switch

| Sourcing | License Type | Part Number | Description |
|-----------------|--|-------------|--|
| NoviFlow Direct | Perpetual license | 800-006-005 | NoviBroker Basic for WB-5164 Perpetual License |
| | | 200-100-100 | NoviWare NOS for 64x100G Perpetual License |
| | | 100-001-101 | Tofino WB-5164 Switch Hardware (AC, Front-to-Back Cooling) |
| | Annual Subscription (Hardware not included) | 850-006-005 | NoviBroker Basic annual software subscription |
| | | 301-100-000 | NoviWare NOS for 64x 100G annual software subscription |

NoviBroker with WB-5132 32x100G Switch

| Sourcing | License Type | Part Number | Description |
|-----------------|--|-------------|--|
| NoviFlow Direct | Perpetual license | 800-006-004 | NoviBroker Basic for WB-5132 Perpetual License |
| | | 200-100-104 | NoviWare NOS for 32x100G Perpetual License |
| | | 100-001-108 | Tofino WB-5132 Switch Hardware (AC, Front-to-Back Cooling) |
| | Annual Subscription (Hardware not included) | 850-006-004 | NoviBroker Basic annual software subscription |
| | | 301-100-004 | NoviWare NOS for 32x 100G annual software subscription |

Compatible Whitebox Hardware

| Sourcing | Model Number | Part Number | Description |
|----------|------------------------|-----------------|---|
| Edgecore | Wedge100BF-32X-O-AC-US | FP3ZZ7632413A | Wedge100BF-32X, 32 port 100G QSFP28 Switch, dual AC PSU |
| | Wedge100BF-65X-O-AC-US | F0PCH7664400S-C | Wedge100BF-65X, 65 port 100G QSFP28 Switch, dual AC PSU |

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