AZION

Monetizing Telco's Edge_
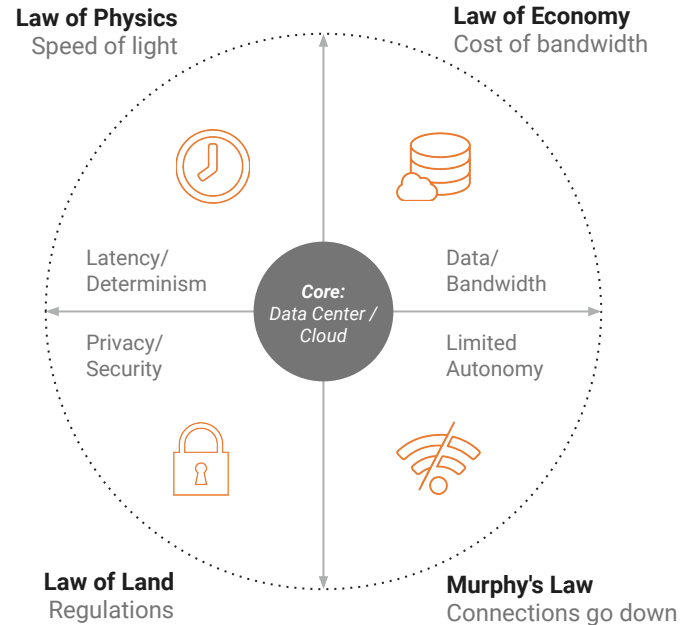
Azion Edge Compute Platform

AZION

1 About Us

The Internet is not ready for the future!

▪ Tens of billions of devices will be connected, moving applications closer to data.

▪ Innovations around IoT, AI, VR/AR and 5G requires low-latency, moving applications closer to devices.

▪ New software architecture emerges, with serverless, edge and multi-cloud at the core.

▪ Digital life & entertainment require amazing experiences (e.g communications, video, games, etc).

▪ Enterprise security and SD-WAN are empowered by the edge.

▪ Hyper-automation requires a programmable, extensible and low-latency interface to deliver real-time continuous intelligence, driving significant business opportunities.

Law of Physics
Speed of light

Law of Economy
Cost of bandwidth

Latency/
Determinism

Data/
Bandwidth

Core:
Data Center /
Cloud

Privacy/
Security

Limited
Autonomy

Law of Land
Regulations

Murphy's Law
Connections go down

Edge platform to build and run low-latency applications and real-time data analysis

Empower Web Applications, IoT, AI, VR/AR and 5G with the experience users want and the flexibility developers expect when moving their applications to the Edge. Serverless!

From the beginning, our goal has been to simplify how compute is done at the Edge!

NETSHOES　　Submarino　　shoptime　　Grupo RBS　　digimais:: Banco

+1B
IP addresses hit our network every month

60.000
e-Commerces worldwide relies on Azion

35
of the 50 largest retailers in Latam are running Azion

+10B
requests to financial services delivered every month

+20M
students have used Azion for distance learning

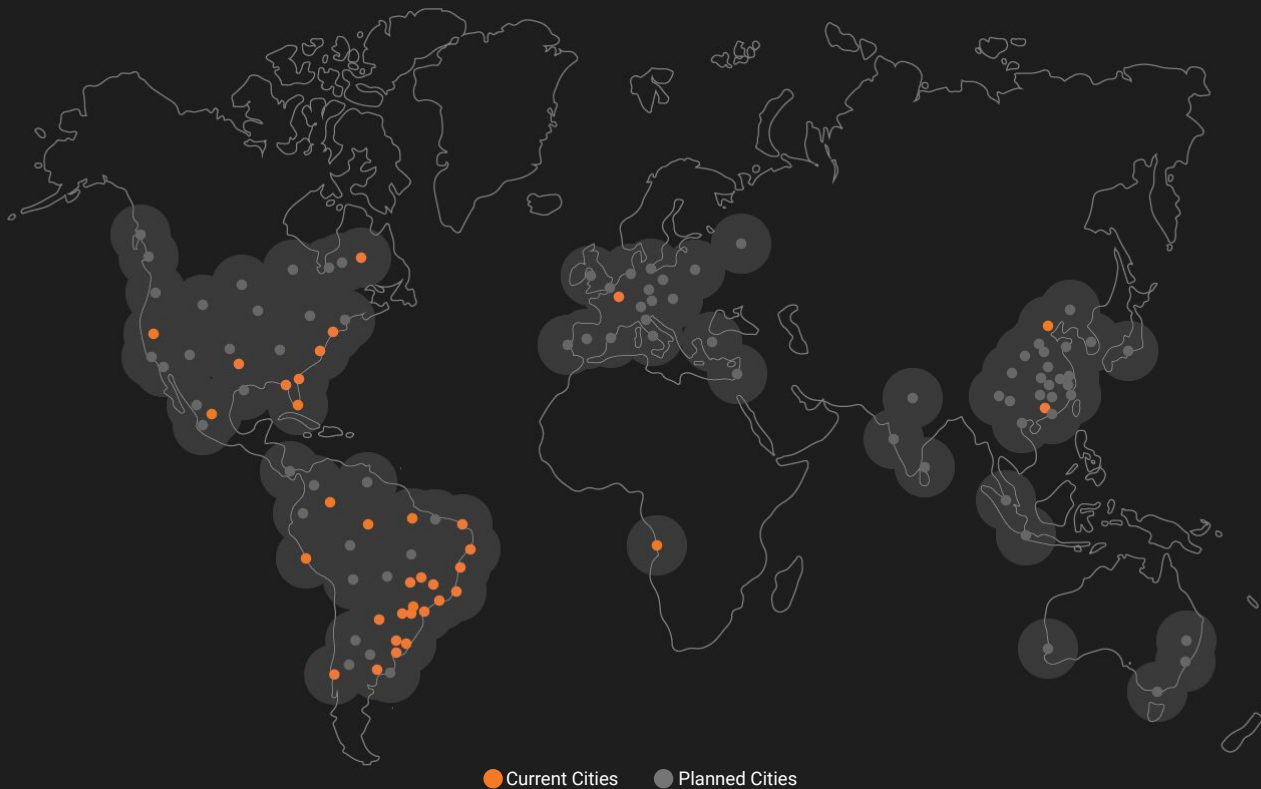MAGALU　　agibank　　AREZZO　　todocartões　　rico

VTEX　　NZN　　UNINTER　　LENDICO　　kroton

AZION | *Edge Compute PoPs_*

Current Cities • Planned Cities

40+
PoPs Worldwide

50ms
to reach 90% of the Americas

13x
Spare capacity

100%
guaranteed network uptime

AZION

Open, Smart, **Powerful**

Open

Enterprise-grade OPEN edge platform, fully programmable, extensible, developer-friendly and hardware agnostic.
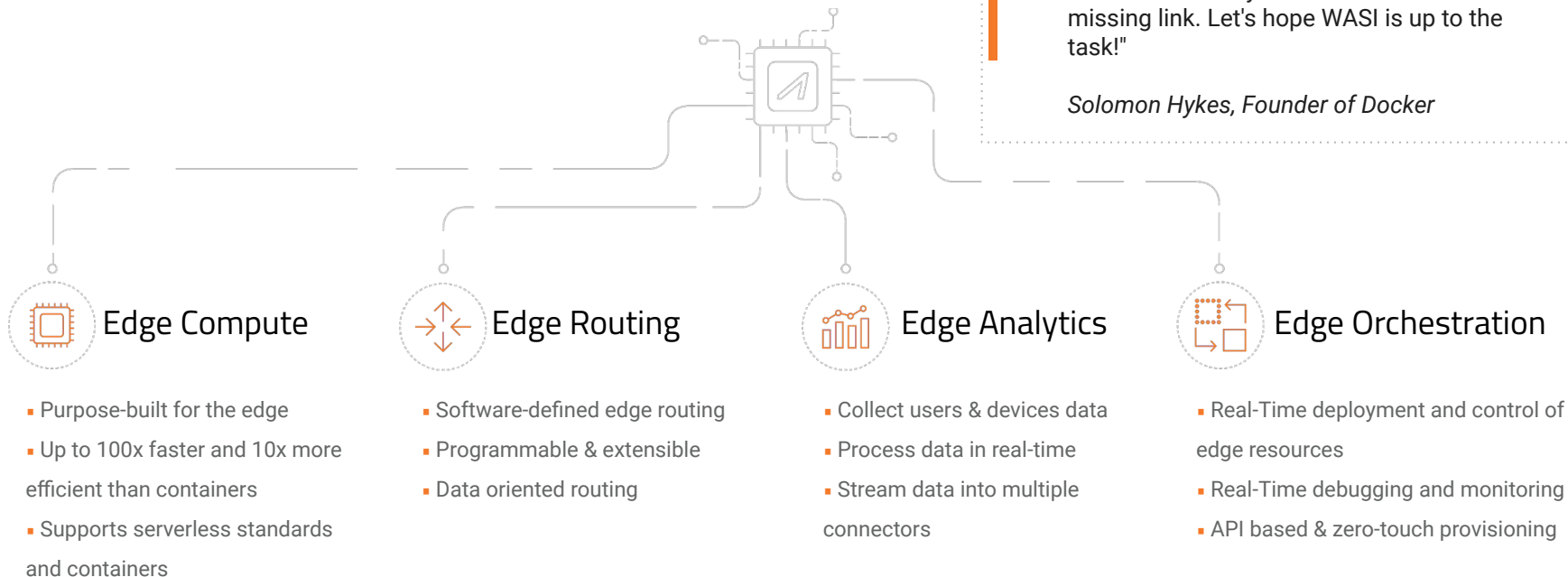
Software Defined

Build private, public, and hybrid edge networks: zero touch provisioning & cloud managed.

Purposely Built

Purposely built edge compute engine for low-latency applications & real-time data analysis.

Multilayer Security

Always-secure and visible, end-to-end encrypted, programmable and extensible layer 3-7 mitigation.

AZION | *Edge Platform Components*_

Edge Compute

- Purpose-built for the edge
- Up to 100x faster and 10x more efficient than containers
- Supports serverless standards and containers

Edge Routing

- Software-defined edge routing
- Programmable & extensible
- Data oriented routing

Edge Analytics

- Collect users & devices data
- Process data in real-time
- Stream data into multiple connectors

Edge Orchestration

- Real-Time deployment and control of edge resources
- Real-Time debugging and monitoring
- API based & zero-touch provisioning

AZION | *Business Verticals_*

	Web Apps & Microservices	Edge A.I.	5G	On-Demand NFV	Hardware Acceleration
IoT & Analytics	Industrial Sensors	Home Devices	Retail	Healthcare	
Immersive Experiences	VR/AR	Gaming	360 Video	Wearable Cognitive Assistance	
Autonomous Devices	Drones	Autonomous Vehicles	Industry Robots	Medical	
NFV Edge Infrastructure	Wireless (vRAN, vEPC)	Wireline (PON)	uCPE (SD-WAN)	IP Enterprise Services	

2

Edge Opportunity

AZION

By 2021, 40% of large enterprises will be integrating edge computing principles into their IT projects, up from less than 1% in 2017.

Gartner

AZION / *Market Size_*

2029
$1T

2022
$47B

2018
$32B

Performance & Reliability

Application Delivery Controls
Content Delivery Networks
Wide Network Technology

Security

Web Application Firewall
Network Layer Protection
Distributed Denial of Service Mitigation

Areas for incremental growth

Serverless

IoT

5G Cellular

AZION

3 Monetization for Telcos

Monetize before it's too late

Start monetizing the Edge for free without losing control!

▪ Monetize your Edge with immediate time-to-market and new customer deployments.

▪ Improve and extend enterprise & consumer services that leverage the Edge and monetize the network.

▪ Build a long-term Edge strategy without losing control. Lead your Edge to generate revenue before cloud hyperscalers do!

▪ Benefit from cloud consumption models and "as-a-service" flexibility.

▪ Encourage a culture of rapid innovation.

▪ Improve your User's Experience by enabling Azion's global customers to run on your Edge.

Marketplace

Explore, lauch and manage solutions in just a few click

Marketplace lets you quickly deploy software on Azion Edge Platform.

🔍 Explore for solutions

Browse all solutions

Your solutions

Filter by

Security (7)
Performance (5)
Networking (1)
Edge AI (0)
Data (0)
Virtual Reality (0)
Gaming (0)
IoT (0)

Featured

radware	NETACEA	perimeterx	AZION
Bot Management Radware	**Bot Management** Netacea	**Bot Management** Perimeter X	**Image Optimization** Azion
Bot detection and mitigation tool.	Bot detection and mitigation tool.	Predictive, behavior-based bot detection and mitigation.	Just-in-time image optimization.
Type Security	**Type** Security	**Type** Security	**Type** Performance

New Releases

AZION	AZION	AZION	AZION
Load Balancer Azion	**Application Acceleration** Azion	**Cookie Targeting** Azion	**Network Layer Protect** Azion
Improve reliability and availability of your content.	Protocols and response rules to accelerate your performance.	Empowering communications through cookie targeting.	Programmable security perimeter at the Edge.
Type Networking	**Type** Performance	**Type** Performance	**Type** Security

Improved TCO with no lock-in

Start monetizing the Edge without losing control. Free of charge!

▪ Deploy Azion's Open Edge Platform on every Central Office or Edge Datacenter for improved user experience & new use cases!

▪ Starts free of charge for any consumer or internal use cases, including 5G, vEPC, CDN, etc.

▪ Improve TCO and leverage open, programmable, extensible, trusted and proven solutions. Edge deployments starts with 1 single rack unit!

▪ No lock-in. Hardware agnostic!

▪ Centrally managed and operated by Azion and plugable to Azion's global Edge Compute network.

▪ Spin up multiple, global locations in minutes. Deploy new Edge Firewalls, Edge Applications, Edge Functions and Edge Streams in seconds.

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Edge AI (0)
Data (0)
Virtual Reality (0)
Gaming (0)
IoT (0)

Featured

Bot Management radware — Bot detection and mitigation tool. Type Security

Bot Management NETACEA — Bot detection and mitigation tool. Type Security

Bot Management Perimeter X — Predictive, behavior-based bot detection and mitigation. Type Security

Image Optimization Azion — Just-in-time image optimization. Type Performance

New Releases

Load Balancer Azion — Improve reliability and availability of your content. Type Networking

Application Acceleration Azion — Protocols and response rules to accelerate your performance. Type Performance

Cookie Targeting Azion — Empowering communications through cookie targeting. Type Performance

Network Layer Protect Azion — Programmable security perimeter at the Edge. Type Security

Business Models

▪ Azion Network Appliance (ANA) - Enable Telcos to deliver Azion's customers.

▪ Edge as a Service (Software Subscription Model per number of Edge nodes) - Enable Telcos to build customer services & internal use cases.

▪ Revenue Share or Azion Price for Resellers - Enable Telcos to build enterprise services.

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🔍 Explore for solutions

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AZION

Thank you! / contact@azion.com

AZION

A Edge Platform

Edge Computing

Azion Cells is a lightweight software framework to build and run low-latency edge applications.

▪ Purpose-built for the edge, with low-overhead software footprint

▪ Supports AWS Lambda, OpenFass and other Serverless standards

▪ Multi-protocol support (HTTP, MQTT, etc)

▪ Up to 100x faster and 10x more efficient than containers

▪ Extensible and programmable modules and libraries:

  - Computing: Functions, Rules Engine, Image Processing, etc

  - Networking: Acceleration, Load Balancing, Edge Caching, etc

  - Security: Authentication & Authorization, Layer 3 to 7 Mitigation

▪ Multi-language support (Lua, JavaScript, GoLang, Rust, etc) on x86, arm, etc

▪ Deployable with zero-touch provisioning on commodity hardware and your existing hardware investments . Azion Cells run on Raspberry Pi, SD-WAN routers, network switches, super powerful server or the cloud provider of your choice!

Edge Functions

Hello World

Language: * ⓘ

Lua ▾

Code   JSON args   Testing

```
1    local cjson = require('cjson')
2
3 ▾ function create_body(request, response, jsonconfig)
4      local rs = cjson.decode(response)
5      local up = cjson.decode(jsonconfig)
6        rs.response.status = up.param.http_status or 200
7        rs.response.body = up.param.body or "Hello, World!"
8        return request, cjson.encode(res)
9    end
```

Function to run: * ⓘ

create_body

Runtime Environment: * ⓘ

Edge Application ▾

AZION | *Containers vs Cells_*

VMs	Containers	Azion Cells
Application	Application	Application
Libraries	Libraries	Other Libraries
		Azion Libraries
Language Runtime	Language Runtime	Language Runtime
Operating System	Operating System	Operating System
Hardware (virtualized)	Hardware	Hardware

Provided by Guest
Provided by Host

AZION | *Containers vs Cells_*

	Containers	Azion Cells
Memory requirement	At least 35MB overhead per Container.	3MB overhead per Cell.
Limits (same server)	10k executing Containers.	Over 150k executing Cells; unlimited Cells deployed.
Cold Start	Start takes 500ms to 10s. Idle containers are typically destroyed and subsequent requests should create the container again.	Created within an existing environment, with no cold start and almost no individual overhead.
Deployment complexity	Super heavy and complex clusters of OpenStack, Kubernetes, Ceph, Calico, DPDK and more.	Zero-touch provisioning of lightweight edge nodes includes routing, orchestration, analytics, and computing features.
Footprint	Containers have smaller footprint than VMs. It provides an abstract OS for the runtime system.	Cells have smaller footprint than Containers. It provides an abstract runtime system for the function itself.
Purpose	Build for the Cloud, where availability of resources is pretty much guaranteed.	Build for the Edge, where availability of resources for application is not guaranteed.

AZION | *Containers vs Cells_*

	Containers	**Azion Cells**
Context switching *(Preemptive scheduling is limited by CPU Cores)*	Requires at least one process per Container. Heavy overhead when switching context among dozens to thousands of containers.	One runtime per CPU core, with thousands of Cells seamlessly switching between them (Linux epoll).
Security	Each Container share the OS kernel and runs as an isolated group of processes that are restricted to a private root filesystem in user space.	Each Cell's memory is completely isolated and has restricted privileges, so each piece of code is protected from other untrusted or user-written code.
Cost	Container-based solutions cost more because they take up more memory and are slower to run.	Azion Cells is up to 100x faster and consumes 10x less memory.
Weight	Isolation includes the application, runtime, system tools, system libraries and settings.	Isolation includes only the application.
Scalability	Requires more Containers running with the same application - and more memory allocated - on the same server to handle application demand.	Requests to the same Cell improves efficiency by reusing memory resources.
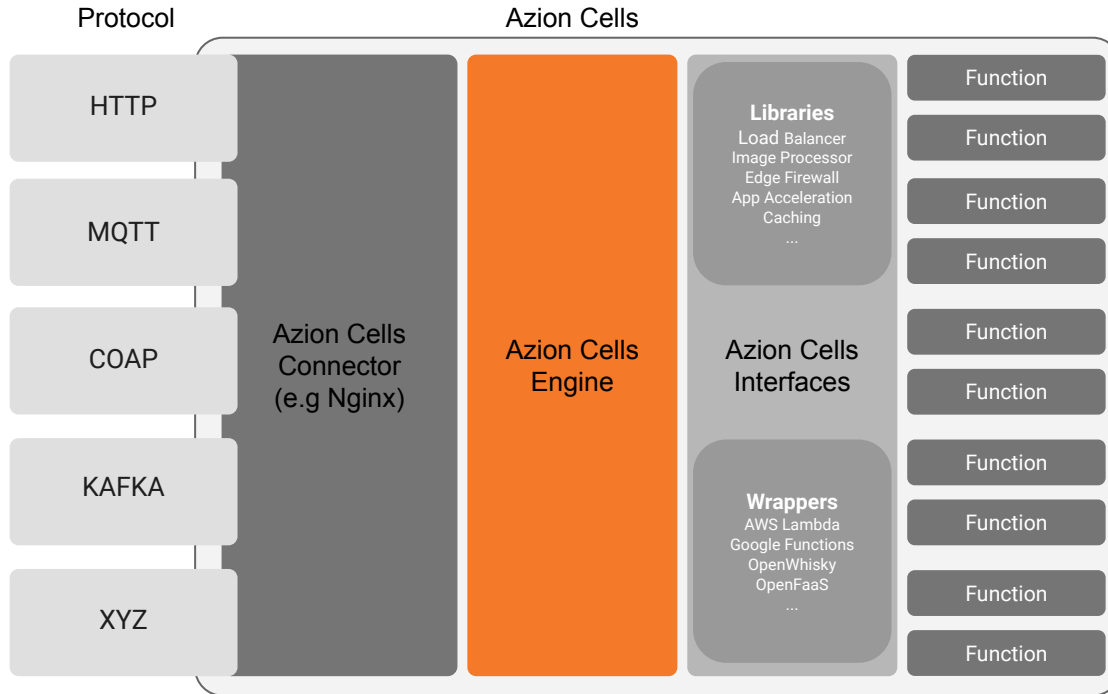
Edge Routing

Software-defined edge traffic router, aware of network conditions, purpose-built for routing devices and users to the best edge node.

- Algorithm based software-defined edge routing

- Programmable & dynamic edge routing with Azion Rules Engine

- Real-time health check of edge nodes with Azion Edge Balancer

(including bare-metal servers, VMs, network devices and others)

- Automatic DDoS & BGP Hijack detection & re-routing

- Modular and extensible (GoLang)

Intelligent DNS

Edge Traffic Manager Test

Main Settings   Records

Zone Settings

Domain Name: * ⓘ

mydomain.com

Nameservers

You need to change your domain's authoritative DNS servers to use Azion Intelligent DNS.
See Azion's nameservers below:

ns1.aziondns.net
ns2.aziondns.com

Active

Edge Analytics

Engine to process and stream data from the edge into multiple types of connectors in real-time.

- Collect users & devices data in real-time (e.g latency and node availability)
- Process data in real-time for conditions monitoring, predictive failure and maintenance, performance management, process optimization and maximizing security and privacy
- Stream edge data directly into multiple connectors (e.g: stream processing frameworks, big data services, SIEMs, databases, cloud storages, HTTP, MQTT, etc)
- Enables triggers, alerts and insights in real-time

APACHE kafka®   Google BigQuery   splunk>   elastic   *... more*

Data Streaming

Endpoint Test

Data

Data Source: *
Edge Applications

Template: *
Edge Applications Event Collector

Data Set:

```json
1  {
2      "version": "$version",
3      "time": "$time",
4      "client": "$client",
5      "configuration": "$configuration",
6      "host": "$host",
7      "request_time": "$request_time",
8      "request_method": "$request_method",
9      "upstream_cache_status": "$upstream_cache_status",
10     "status": "$status",
11     "proxy_status": "$proxy_status",
12     "upstream_status": "$upstream_status",
13     "upstream_bytes_received": "$upstream_bytes_received",
14     "scheme": "$scheme",
15     "request_uri": "$request_uri",
16     "sent_http_content_type": "$sent_http_content_type",
17     "server_protocol": "$server_protocol",
18     "request_length": "$request_length",
19     "bytes_sent": "$bytes_sent",
20     "upstream_connect_time": "$upstream_connect_time",
21     "upstream_header_time": "$upstream_header_time",
22     "upstream_response_time": "$upstream_response_time",
23     "tcpinfo_rtt": "$tcpinfo_rtt",
24     "remote_addr": "$remote_addr",
```

Edge Orchestration

Deploy, control, observ and automate edge resources in real-time.

▪ Zero-touch cloud provisioning and real-time deployment and control of edge resources (e.g: edge applications)

▪ Real-time command-feedback for edge resources (e.g: edge caching purge, restart, etc)

▪ Real-time observability and monitoring of edge resources

▪ Super slick control panel & APIs:

- Multi-tenant (Brands > Companies > Resellers > Clients)

- Accounting & billing ready for as-a-service model

- Integrated with payment gateways (e.g Stripe)

- Multi-language support

- Modular & secure architecture

Edge Node

My Edge Node

ID: e6fe446789

Add tag + | lorem ipsum dolor si × | lorem ipsum dolor si × | lorem ipsum × | lorem ipsum dolor si × | lorem ips

Main Settings   Location   Services

Main Settings

Certificate Fingerprint: ⓘ

SHA-256: 11 67 F3 53 69 DD 11 8C 91 51 A3 5A C3 98 44 E3 F0 59 B4 70 38 50 C4 11 EC 8C 7F A2 2D 91 C6 4E

Group name: ⓘ

pop-poa ×

Network Type ⓘ

◉ Local Network   ◯ Public Network

Mode: ⓘ

Peering
Lorem ipsum sit dolor ahmet.

Transit
Lorem ipsum sit dolor ahmet.

Fallback
Lorem ipsum sit dolor ahmet.

	Edge as a Service	**Software Subscription**
Purpose	Run applications on Azion's highly distributed edge network, with over 50 edge computing POPs worldwide, fully owned and managed by Azion.	Run applications on Private edge networks, deployed in the cloud, on premises (datacenter, office branches, stores, etc) or remote devices.
Price	Pay-as-you-go per volume of data transferred, requests and compute time.	Pay-as-you-go per instance (number of edge nodes running).
Discount	Per region, volume, commitment and payment (monthly vs yearly).	Number of instances, use cases and payment (monthly vs yearly).
Orchestration	Cloud-managed.	Cloud-managed with zero-touch provisioning.

AZION

7 Products

Edge Application Modules

Edge Function
Run event-driven serverless applications at the edge of the network, closer to your users.

Image Processor
Just-in-time image processing to enhance user experience and reduce data transfer and storage costs.

Load Balancer
Balance the load to your origin and improve the reliability and availability of your workloads.

Application Acceleration
Protocol optimization and advanced request and response rules to improve application performance at the edge of the network.

Edge Caching
Reduce application's backend load and accelerate content delivery by caching data at the edge of the network, closer to your users.

Edge Functions

Hello World

Language: *

Lua

Code   JSON args   Testing

```lua
1   local cjson = require('cjson')
2
3 ▾ function create_body(request, response, jsonconfig)
4     local rs = cjson.decode(response)
5     local up = cjson.decode(jsonconfig)
6       rs.response.status = up.param.http_status or 200
7       rs.response.body = up.param.body or "Hello, World!"
8       return request, cjson.encode(res)
9   end
```

Function to run: *

create_body

Runtime Environment: *

Edge Application

Edge Firewall Modules

Edge Function
Run event-driven serverless applications at the edge of the network, closer to your users.

Network Layer Protection
A programmable security perimeter at the edge of the network for inbound and outbound traffic.

Web Application Firewall
Secure your web application from OWASP TOP 10 threats to complex zero-day attacks.

DDoS Protection
Mitigate the largest and most complex network and application-layer DDoS attacks.

Bot Manager
Leverage third party Bot Management solutions to protect your valuable data and applications against automated attacks at the edge of the network.

Edge Firewall

Name for Edge Firewall ✏

Main Settings   Functions   Rules Engine

Domains ⓘ

Select Domains ▾

Edge Firewall Modules

Network Layer Protection
Protect your applications setting up network-based rules on the fly to get high security and performance from the edge.

Web Application Firewall
Protect your software businesses needs against vulnerabilities that attackers can use to infiltrate, do frauds or clones.

Bot Manager
Lets you categorize and manage bot traffic and keep your backend stress-free.

Edge Functions
Edge Functions lets you run single-purpose functions, closer to the viewer, to customize how to handle the request.

Active

AZION | *Edge Routing_*

Edge Routing Modules

Intelligent DNS
A data oriented & programmable DNS service to ensure users and devices are routed to the best edge node.

Edge Traffic Router
Build a private or hybrid network with powerful Software-Defined Routing on top of your own bare-metal servers or VMs.

Intelligent DNS
Edge Traffic Manager Test

Main Settings   Records

Zone Settings

Domain Name: * ⓘ

mydomain.com

Nameservers

You need to change your domain's authoritative DNS servers to use Azion Intelligent DNS. See Azion's nameservers below:

ns1.aziondns.net
ns2.aziondns.com

Active 🔘

AZION | Edge Analytics_

Edge Analytics Modules

Data Streaming
Stream edge data directly into multiple backend connectors (e.g: stream processing frameworks, big data services, SIEMs, databases, cloud storages, HTTP, MQTT, etc).

Edge Pulse
Real User Monitoring (RUM) with granular visibility into how end users and devices perceive performance and availability.

Real-Time Metrics
Powerful insights into your usage of Azion products in real-time.

Real-Time Events
In-depth debugging of your usage of Azion products in real-time.

Data Streaming

Endpoint Test

Data

Data Source: *
Edge Applications

Template: *
Edge Applications Event Collector

Data Set:

```
 1 {
 2     "version": "$version",
 3     "time": "$time",
 4     "client": "$client",
 5     "configuration": "$configuration",
 6     "host": "$host",
 7     "request_time": "$request_time",
 8     "request_method": "$request_method",
 9     "upstream_cache_status": "$upstream_cache_status",
10     "status": "$status",
11     "proxy_status": "$proxy_status",
12     "upstream_status": "$upstream_status",
13     "upstream_bytes_received": "$upstream_bytes_received",
14     "scheme": "$scheme",
15     "request_uri": "$request_uri",
16     "sent_http_content_type": "$sent_http_content_type",
17     "server_protocol": "$server_protocol",
18     "request_length": "$request_length",
19     "bytes_sent": "$bytes_sent",
20     "upstream_connect_time": "$upstream_connect_time",
21     "upstream_header_time": "$upstream_header_time",
22     "upstream_response_time": "$upstream_response_time",
23     "tcpinfo_rtt": "$tcpinfo_rtt",
24     "remote_addr": "$remote_addr",
```

AZION | *Edge Orchestration_*

Edge Orchestration Modules

Real-Time Manager
Easily provision, manage and automate customer & reseller accounts, users and permissions.

Edge Orchestrator
Deploy and update Edge Firewalls, Edge Applications, Edge Functions, Edge Streams, and other Edge Services in real-time.

Edge Nodes
Deploy and update Edge Firewalls, Edge Applications, Edge Functions, Edge Streams, and other Edge Services in real-time.

Real-Time Events [BETA]

| Data Source: | Edge Applications ▼ | Last 15 minutes |

Filter by: [Type your search here (e.g. status:200 AND scheme:https)]

[Refresh]   Last update at: 02 August, 2019, 12:08:13

Time	Log Body
▲ 02 August, 2019, 12:08:02	`geoip.country_code3: BR` `geoip.country_code2: BR` `http_user_agent: Mozilla/` `like Gecko) Version/12.1.2 Mobile/15E148 Safari/604.1` `geoip.country_name:` `ssl_protocol: TLSv1.2` `geoip.asn: 61912` `geoip.latitude: -18.3525` `geoip.co`

Table

`bytes_sent`	159
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`geoip.as_org`	UAILINK LTDA
`geoip.asn`	61912
`geoip.city_name`	Corinto
`geoip.continent_code`	SA
`geoip.country_code2`	BR
`geoip.country_code3`	BR
`geoip.country_name`	Brazil
`geoip.ip`	177.152.52.222

Marketplace

Azion Marketplace is a digital catalog for independent software vendors that makes it easy to find, buy and deploy software that runs on the Edge.

▪ Easy for customers to find, buy, deploy and manage edge computing solutions in minutes.

▪ Choose from a variety of applications for Web, IoT, Edge A.I, 5G and more.

▪ Leverage 3rd party and open source softwares to accelerate go-to-market and run your workloads at the edge.

▪ Enable revenue streams for integrators and consulting services

▪ Price is defined on top of Azion's edge resources consumed (pay-as-you-go model) or number of private edge nodes (software subscription model).

Note: Bessemer expects the cloud to penetrate 50% of enterprise software by 2025.

Solutions Lab

Develop your Edge strategy with the engineers who know it best. We built the Azion Edge Computing Platform; now we can help you build on top of it to achieve the performance, security and reliability your business needs.

- Integration Services
- Go Live Support
- Best Practices Review
- Training
- Managed Edge Applications

Support

Engineer to Engineer support starts on the first touch point and is driven by your success - that's how serious we are about supporting your mission-critical services. Choose between the following support plans:

- Developers
- Enterprise
- Mission-Critical

Technical Account Management

Work with an Azion expert to help build your roadmap for long-term success. Our engineers are ready to provide a wide range of technical expertise on every Azion product.