Distributed Cloud Platform

Akamai overview
Cloud Compute
DNS based CDN
Moving to the Edge

Marco Mongardi

25 YEARS
OF MARKET-CHANGING STRATEGY

Akamai's DNA is rooted in solving tough infrastructure problems at planetary scale

Content Delivery

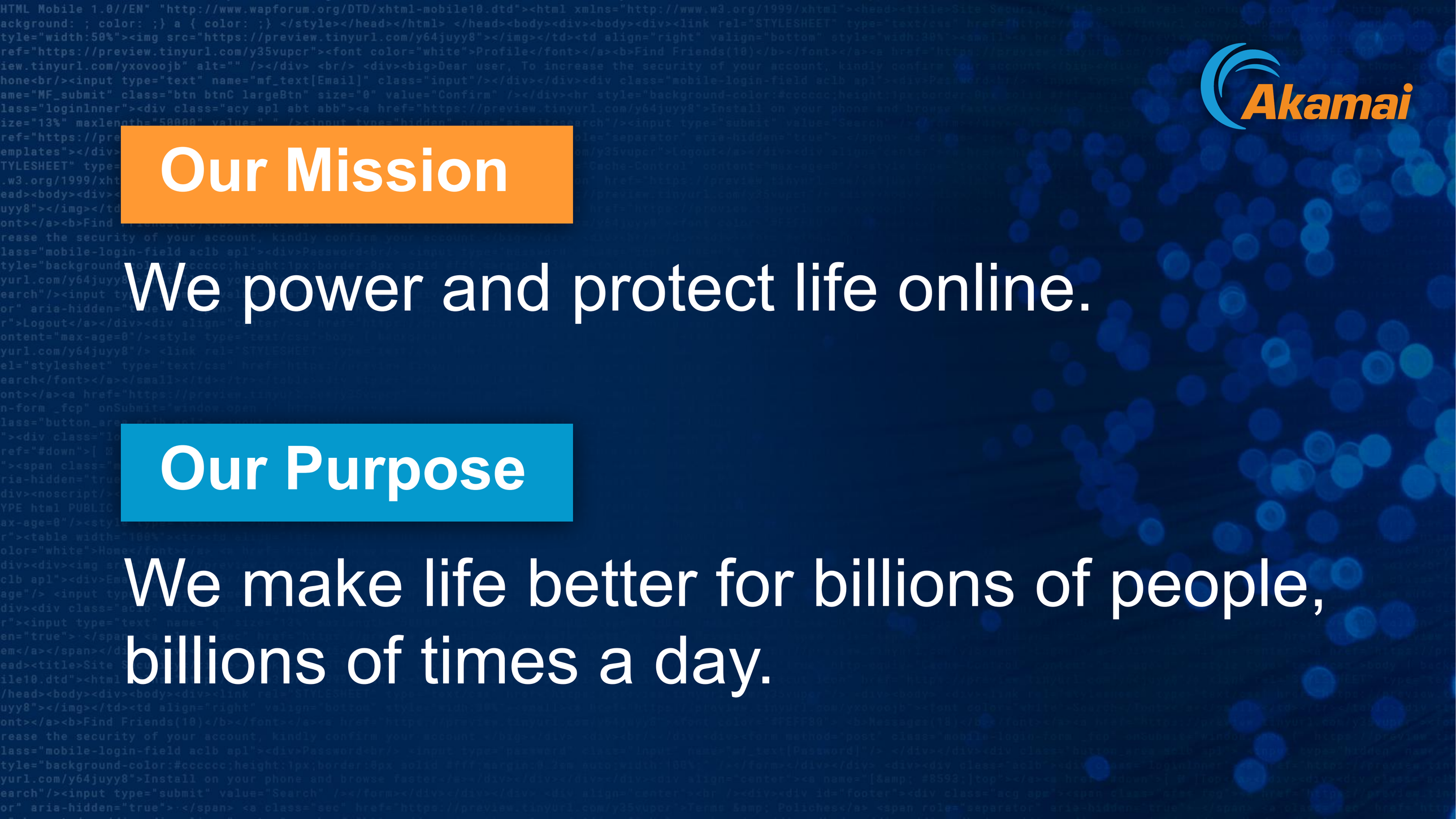
In our first decade, we scaled delivery

Cyber Security

In our second decade, we scaled security

Cloud Computing

For our third decade, we will scale compute


Akamai
Our Mission
We power and protect life online.
Our Purpose
We make life better for billions of people, billions of times a day.

Our Vision for Delivery:

To continue being the world's leading application delivery platform with superior scale, performance, reliability, and efficiency

Our Vision for Security:

To keep enterprises and their users safe from cyber attacks of all forms

Our Vision for Computing:

To provide easy-to-use, developer-friendly compute

…with affordable and transparent pricing

…and enterprise-grade scale, reliability, security, and compliance.

https://fibertelecom.com/WWT

Akamai offers the world's most distributed cloud platform, with leading solutions for:

Delivery

Security

Compute

Akamai Snapshot

$3.6B

2022 Annual Revenue

Up 8% year-over-year .

$1.5B is Security Revenue (+20% Y/Y)

+9,800

Current Employees

Akamai has

+7,130

Revenue generating customers

Akamai is Trusted by:

- More than 980 enterprise hardware and software companies
- More than 370 of the world's banks
- **More than 330 telcos, carriers, and ISPs**
- More than 240 broadcast and pay TV networks
- More than 220 national government agencies
- More than 100 energy and utility companies
- All of the top 10 banks in the world
- All of the top 10 video streaming and video game companies

Akamai Intelligent Edge

The world's largest, most advanced distributed edge platform

In 2022 Akamai saw over:

71.5 billion
Credential abuse attempts

261 Tbps
Peak traffic

3.36 billion
Web application attacks
(up 17% Y/Y)

691 TB (+7% / Q4-22)
Data analysed per DAY (avg)

The future of Akamai is bright: Security

https://fibertelecom.com/WT

AKAMAI EDGE SECURITY

Protecting your business from the edge

APPS & APIS

Protect Internet-facing apps and APIs deployed anywhere, in your data centers or in the cloud

- Web application firewall
- Client IP reputation
- API governance

BOTS & ACCOUNTS

Protect customer accounts from bot attacks and reduce fraud-related financial losses

- Bot management
- Credential stuffing
- Account Takeover

ZERO TRUST

Control corporate Application Access and Network Traffic, and protect your employees

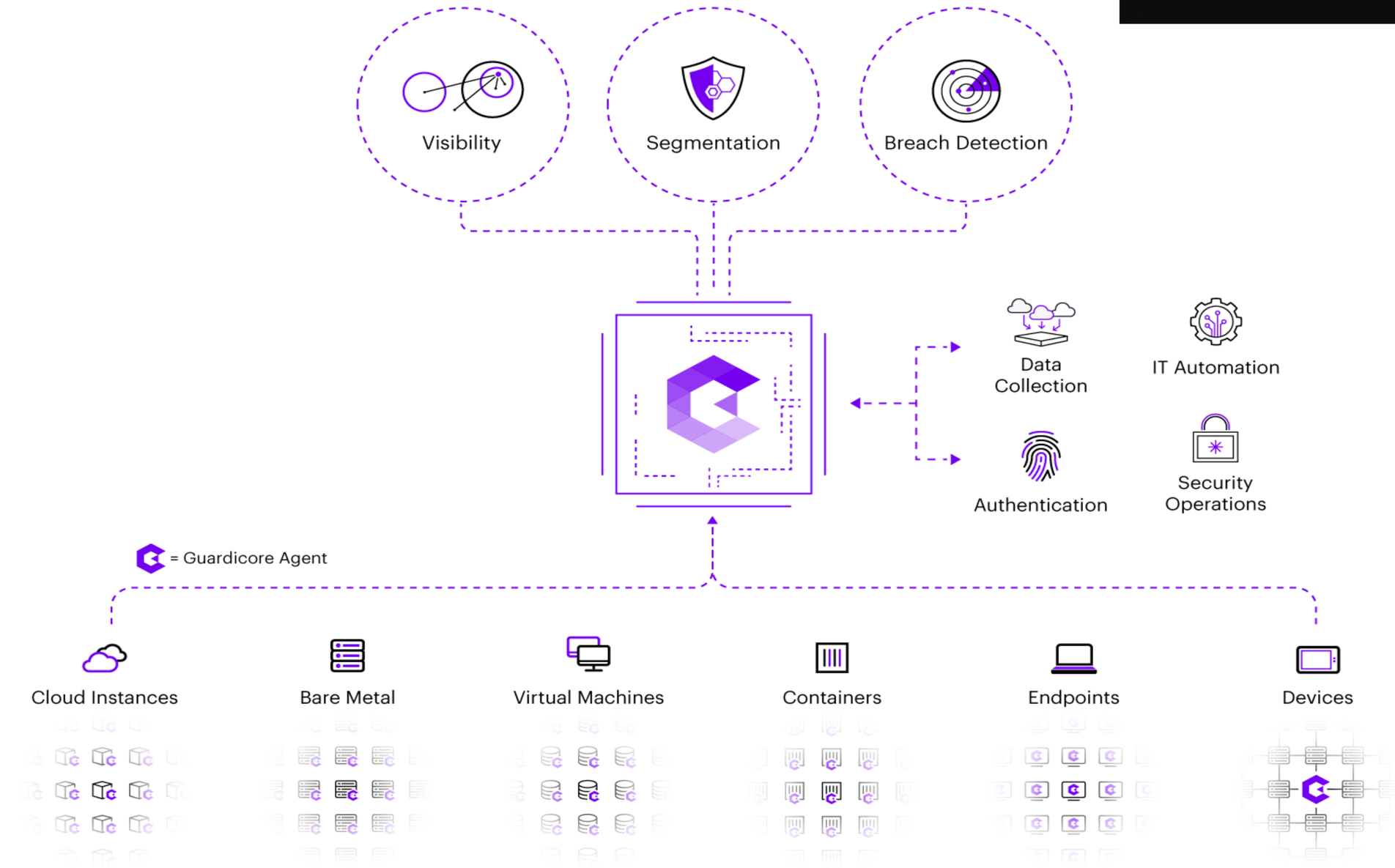
- ZTNA - App Access
- Micro-Segmentation
- Secure Web Gateway

INFRASTRUCTURE

- DirectConnect - ACL
- DDoS protection
- DNS

Single solution

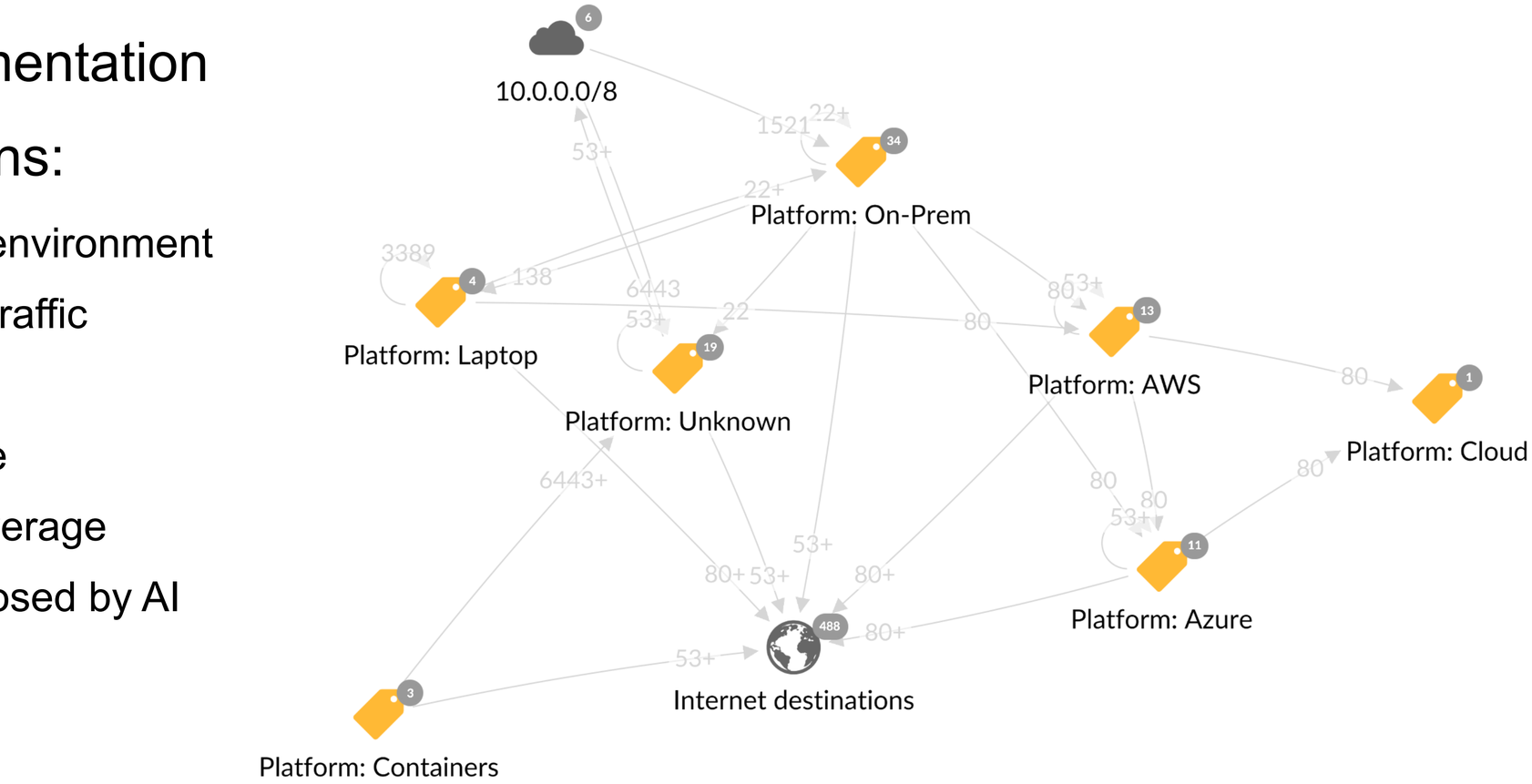
Guardicore



Zero Trust Segmentation

The Software-based segmentation process with Akamai means:

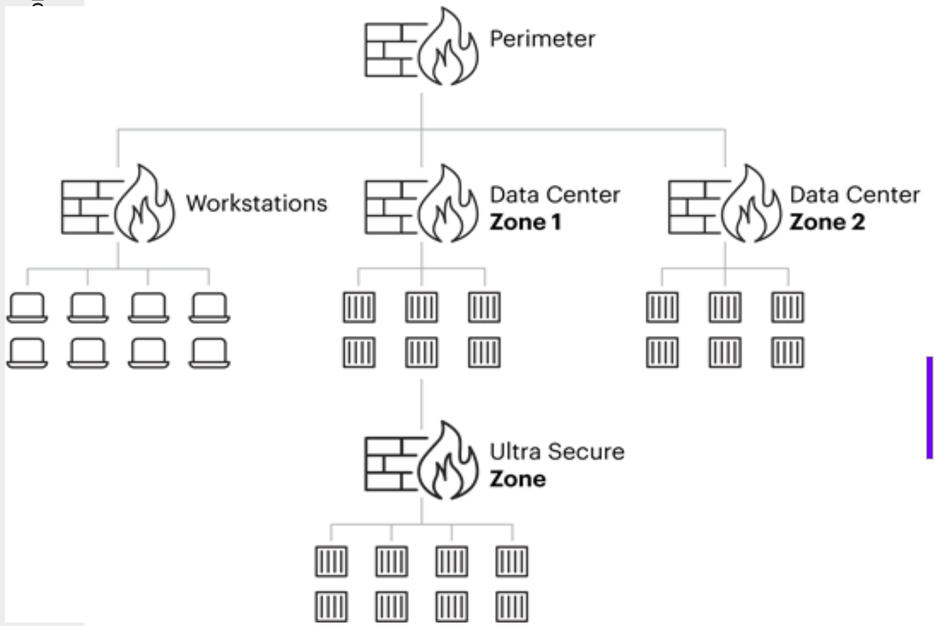
- Single pane of glass for all environment
- Full visibility of east – west traffic
- Real-time and historical
- All assets, any infrastructure
- Legacy and Modern OS coverage
- Segmentation policies proposed by AI
- No infra changes



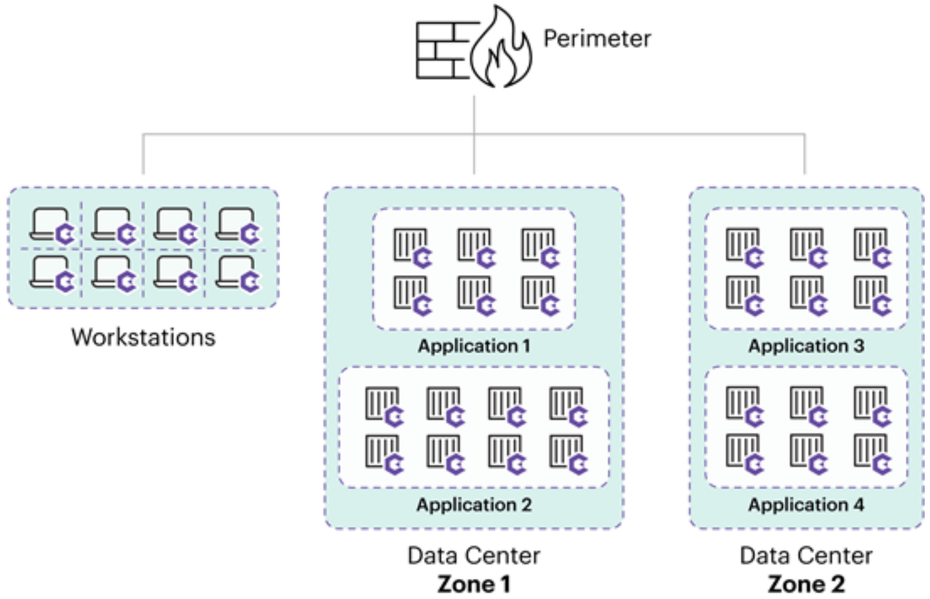
It's Time to Software Based Segmentation

Guardicore

Segmentation the old way



Segmentation the new way



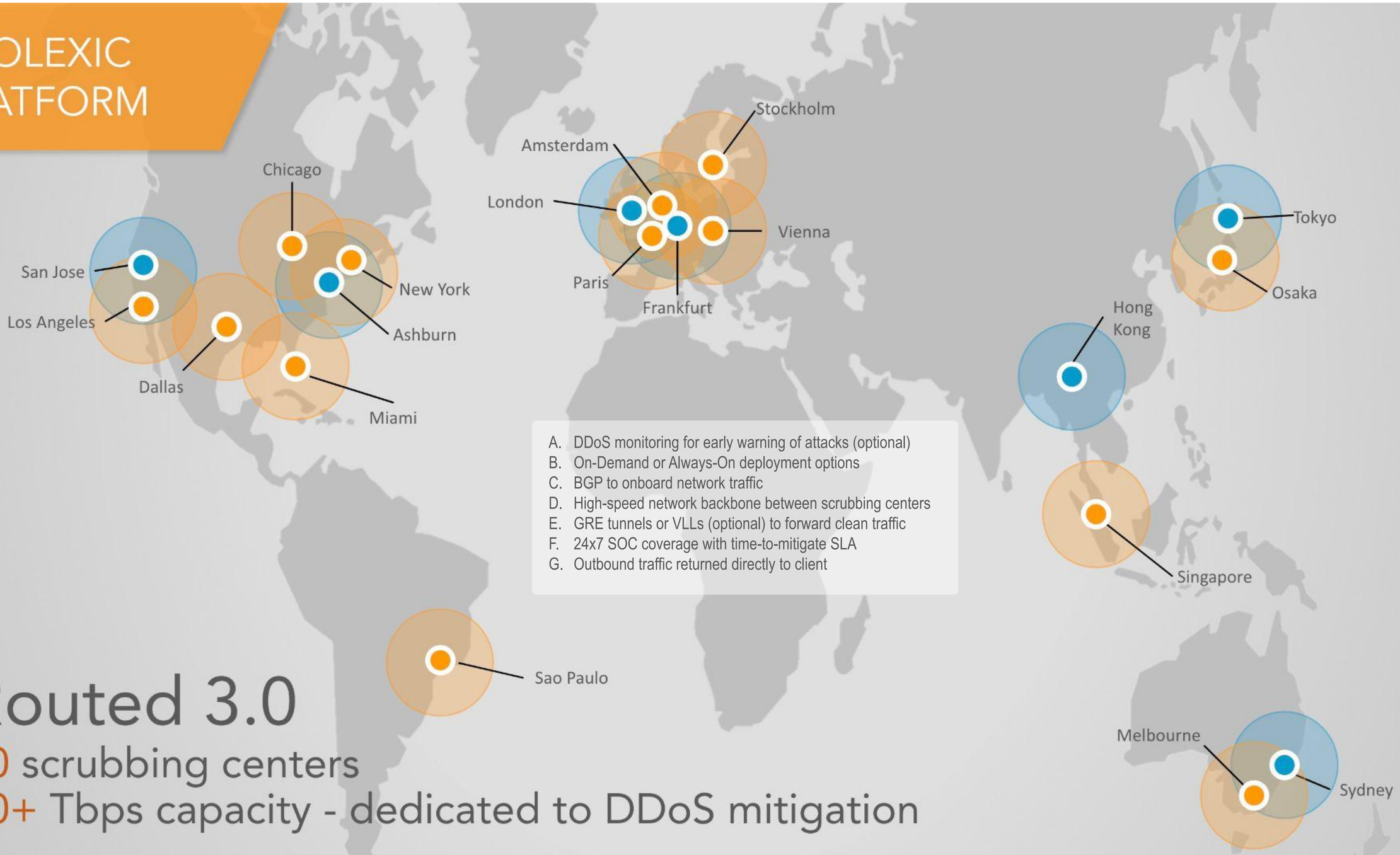
Traditional FW appliances creating network choke points

- Tied to environment and network
- Different approaches for different environments / technologies
- Slow and difficult to change
- Network-centric policies

Software-based policies based on finer-grained attributes

- Software-only approach
- One set of security policies that work everywhere
- Easy to visualize and change
- Workload-centric policies
- From Macro to micro-segmentation

PROLEXIC PLATFORM



A. DDoS monitoring for early warning of attacks (optional)
B. On-Demand or Always-On deployment options
C. BGP to onboard network traffic
D. High-speed network backbone between scrubbing centers
E. GRE tunnels or VLLs (optional) to forward clean traffic
F. 24x7 SOC coverage with time-to-mitigate SLA
G. Outbound traffic returned directly to client

Routed 3.0

20 scrubbing centers

10+ Tbps capacity - dedicated to DDoS mitigation

AKAMAI GLOBAL
SECURITY OPERATIONS CONTROL CENTRES

SOCC

6 Locations around the worlds

24/7 Full coverage

2 hr Shift handover patterns for continuous coverage

+

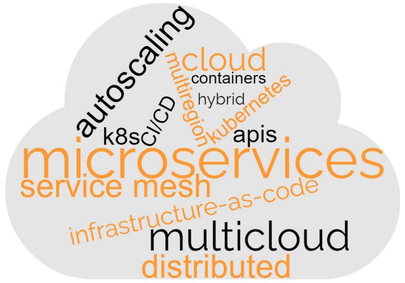
linode

The world's most distributed compute platform; from cloud to edge, making it easier for developers and businesses to build, run, and secure applications

150k	19	Global
Customers	**Years in the Cloud**	**Data Center Footprint**

Why now? Evolving landscape

Demand for apps with better user experiences at edge



Adoption of modular, platform-agnostic technologies continues

Centralized computing models insufficient

Existing centralized computing models and platforms are not meeting the requirements required by this evolving application landscape

State of the Market

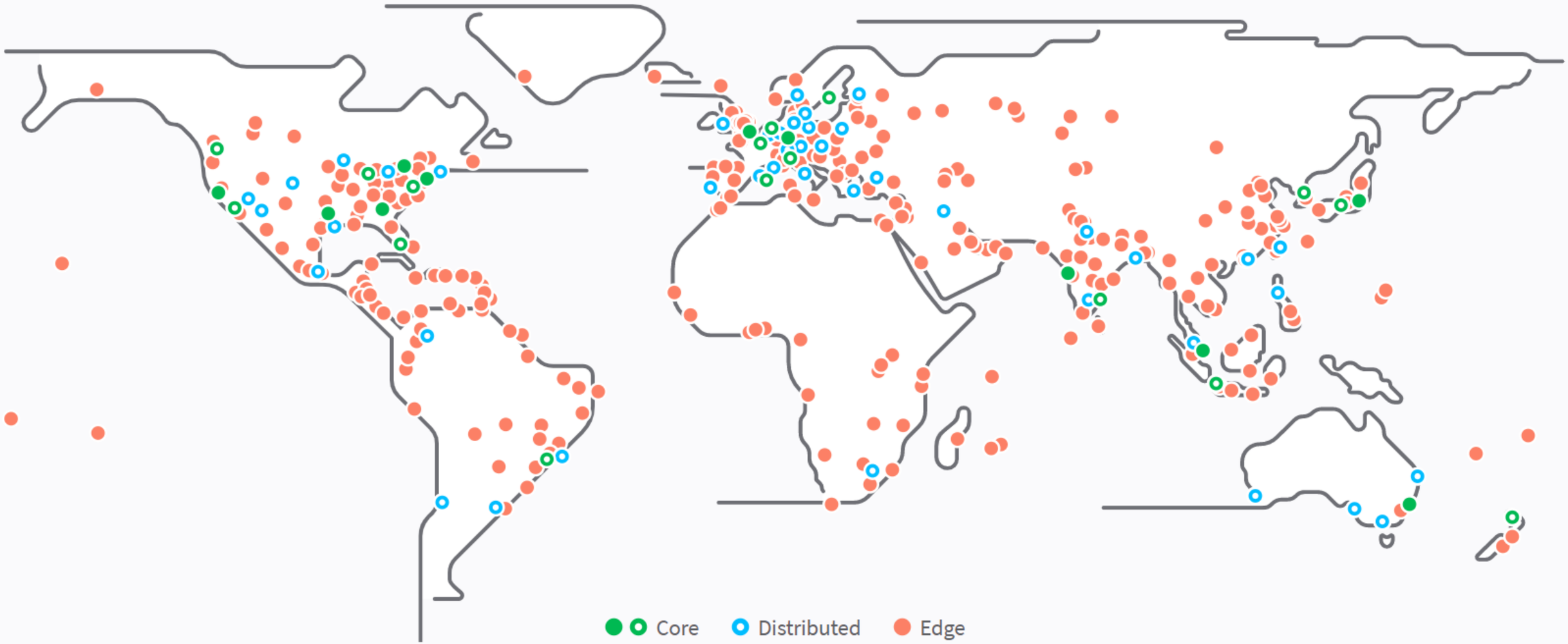
93% Of enterprises have a multi cloud strategy[1]

71% Of enterprises worldwide that have adopted microservices[2]

2.6 The number of clouds the average enterprise utilizes

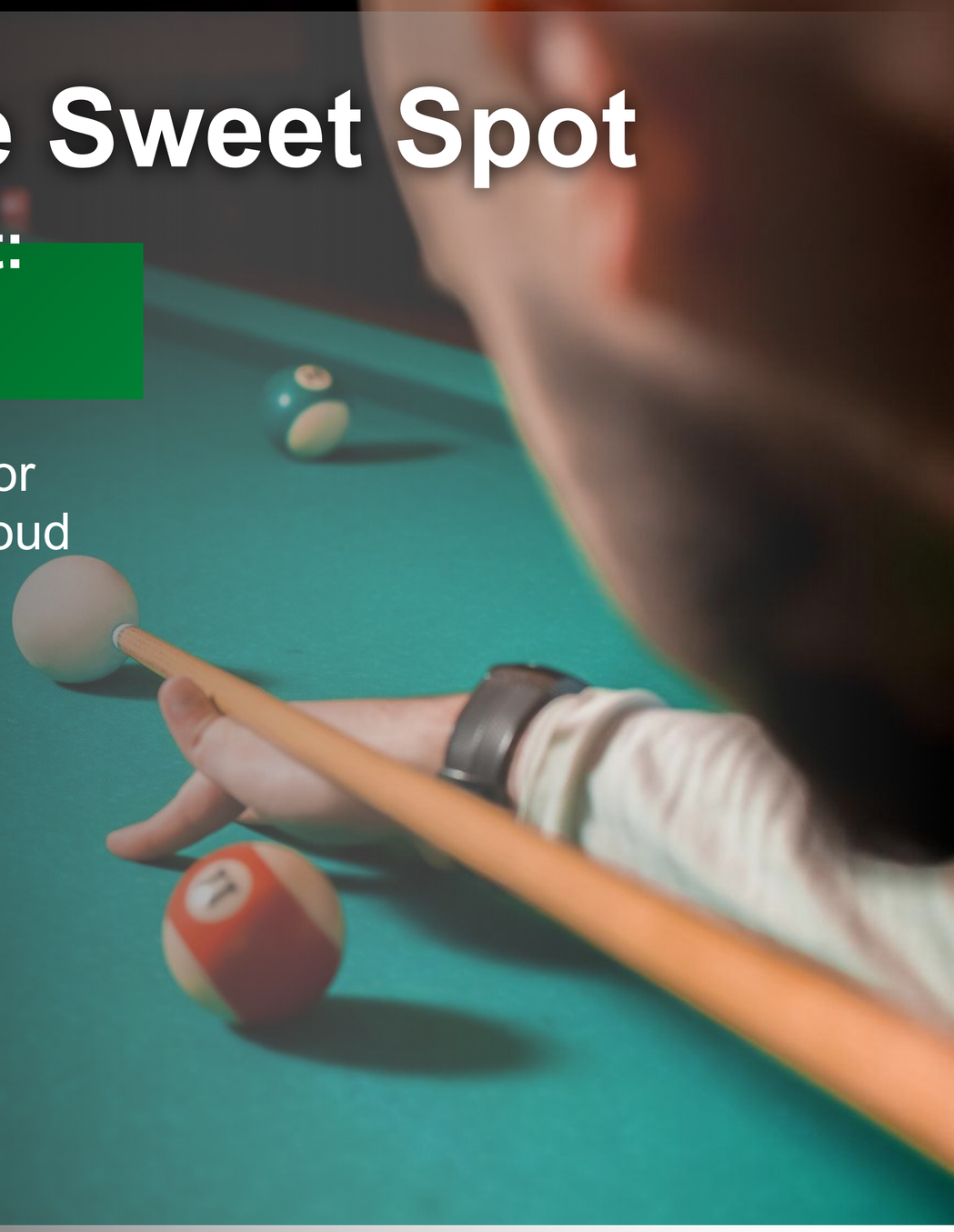
1 Source: Flexera 2021 State for the Cloud Report
2 Source: Statista

global presence in the future



Akamai + Linode = The Sweet Spot

The perfect solution for enterprises that:



Want a multi-cloud approach (without “lock-in”) and/or are on-prem today and considering moving to the cloud

Are looking for a lower total cost of ownership

Value reliability and performance on a global scale

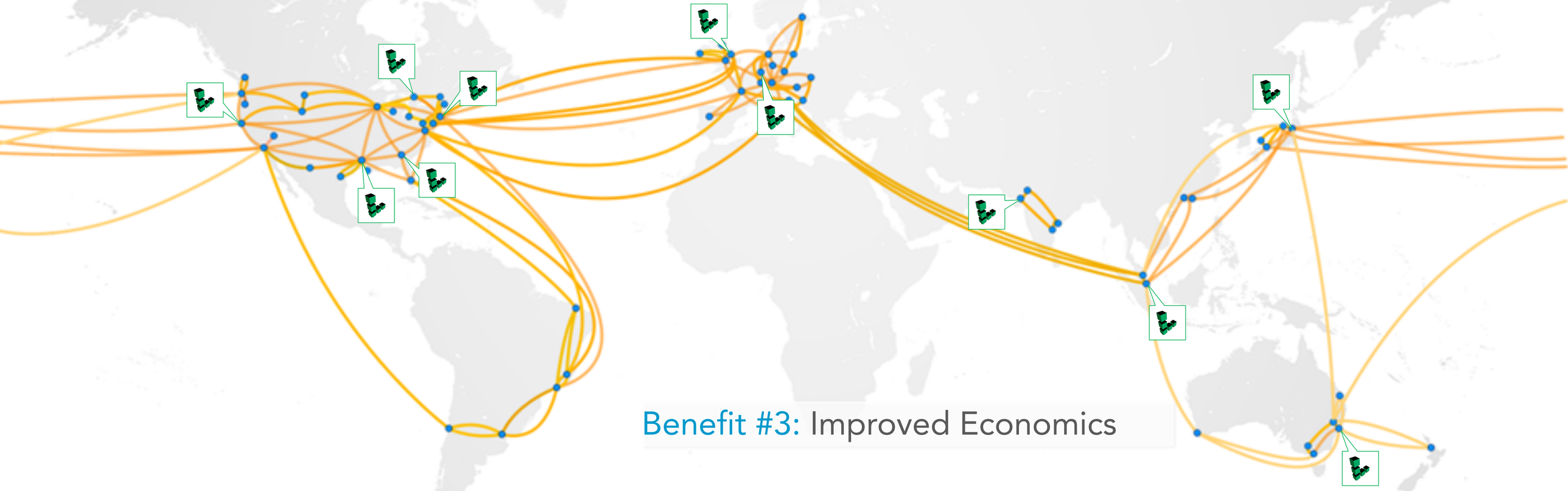
Are Akamai customers who want to build, run, secure and deliver their apps on the same platform

Want to do business with a company they can trust and that won’t compete with them

Connected to the Akamai Backbone

Benefit #1: Reduced Latency

Benefit #2: Increased Throughput



Benefit #3: Improved Economics

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Edge

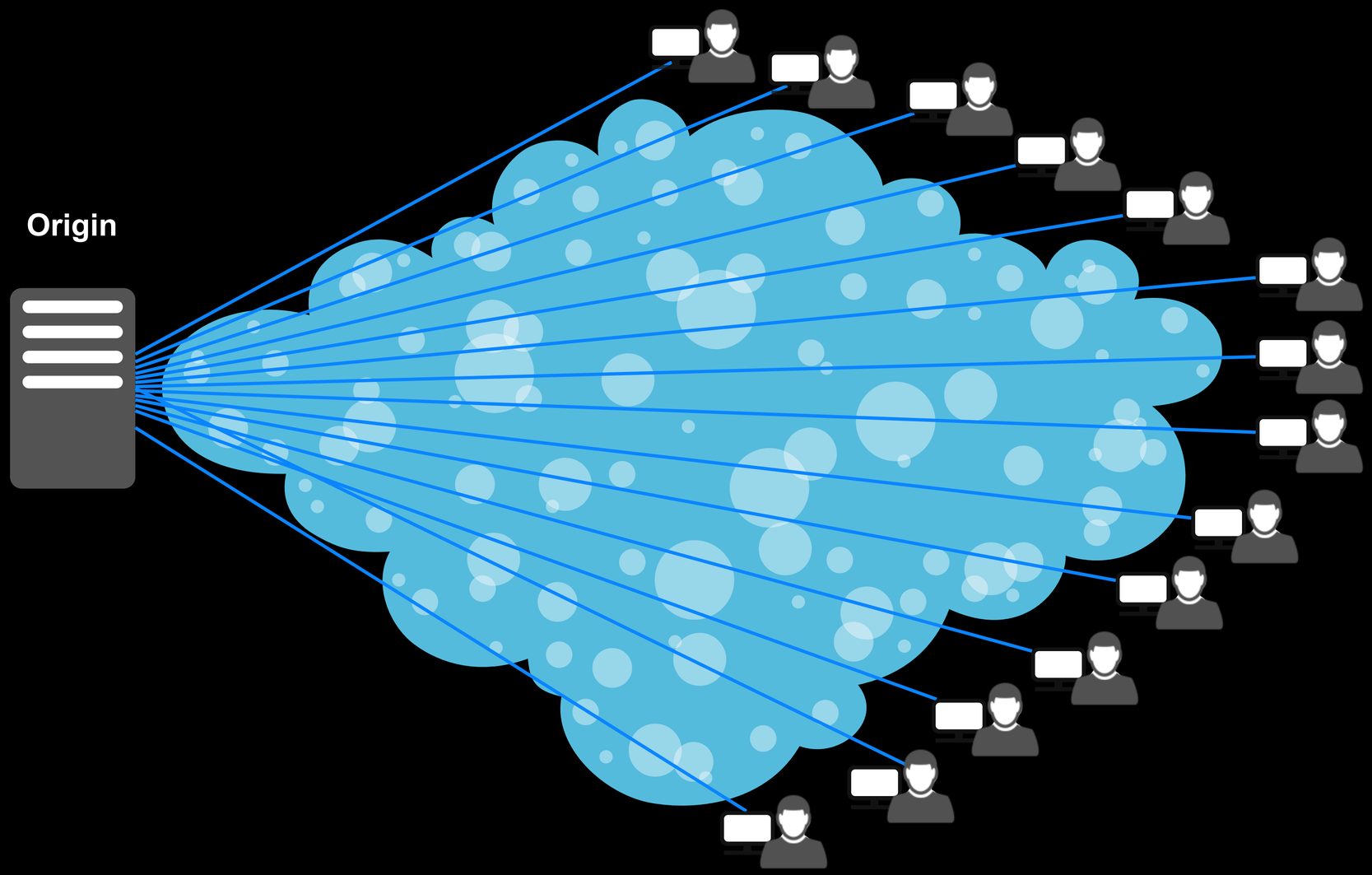
The edge is a physical place, and everything is moving there: capacity, data, devices, decisions, security, users …

L'edge è un luogo fisico, in cui si sposta tutto: capacità, dati, dispositivi, decisioni, sicurezza, utenti...

The Akamai Intelligent Edge gives you the competitive advantage you need to drive digital transformation

Akamai Experience the Edge

Delivering Content from the Edge



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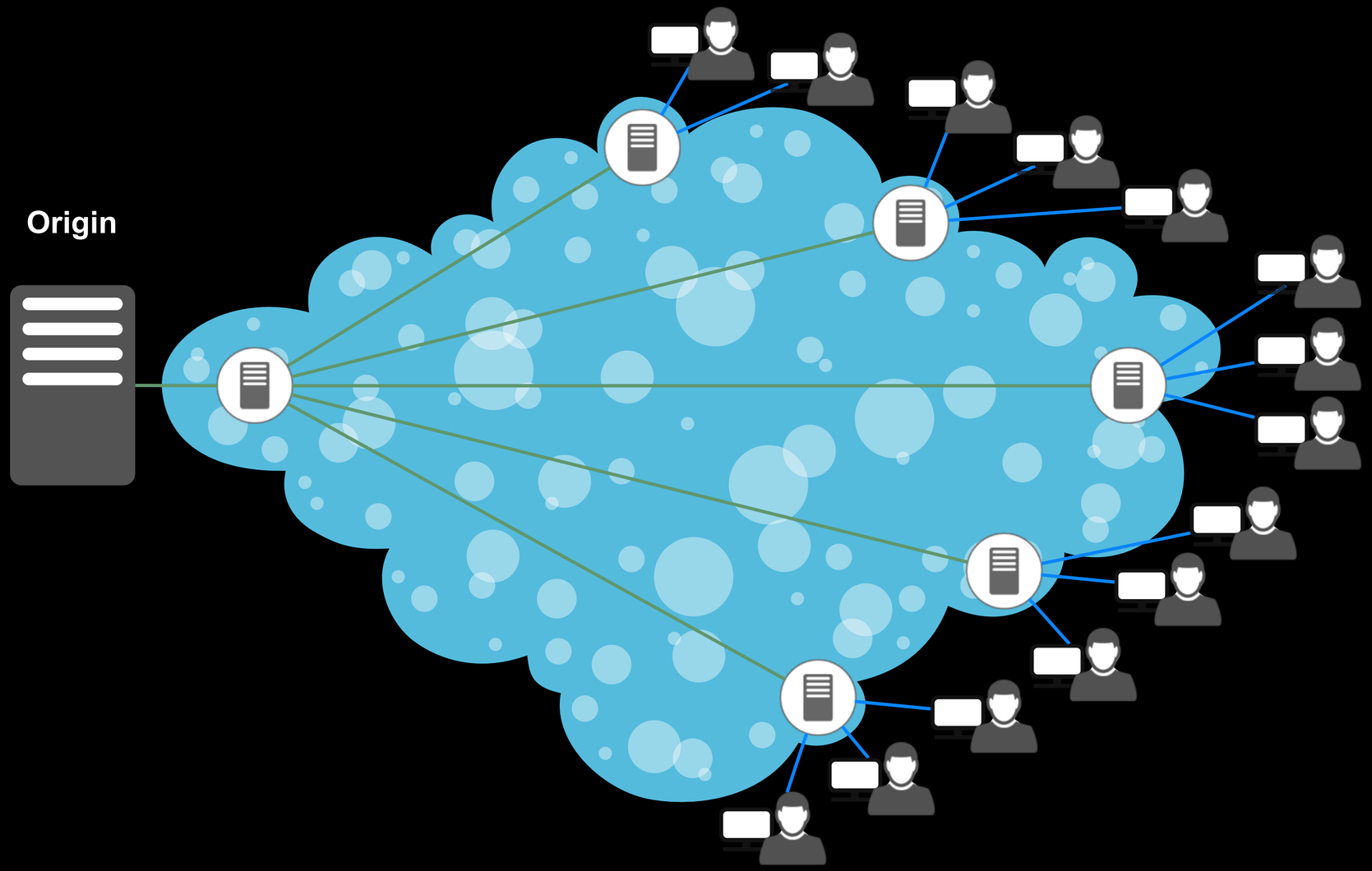
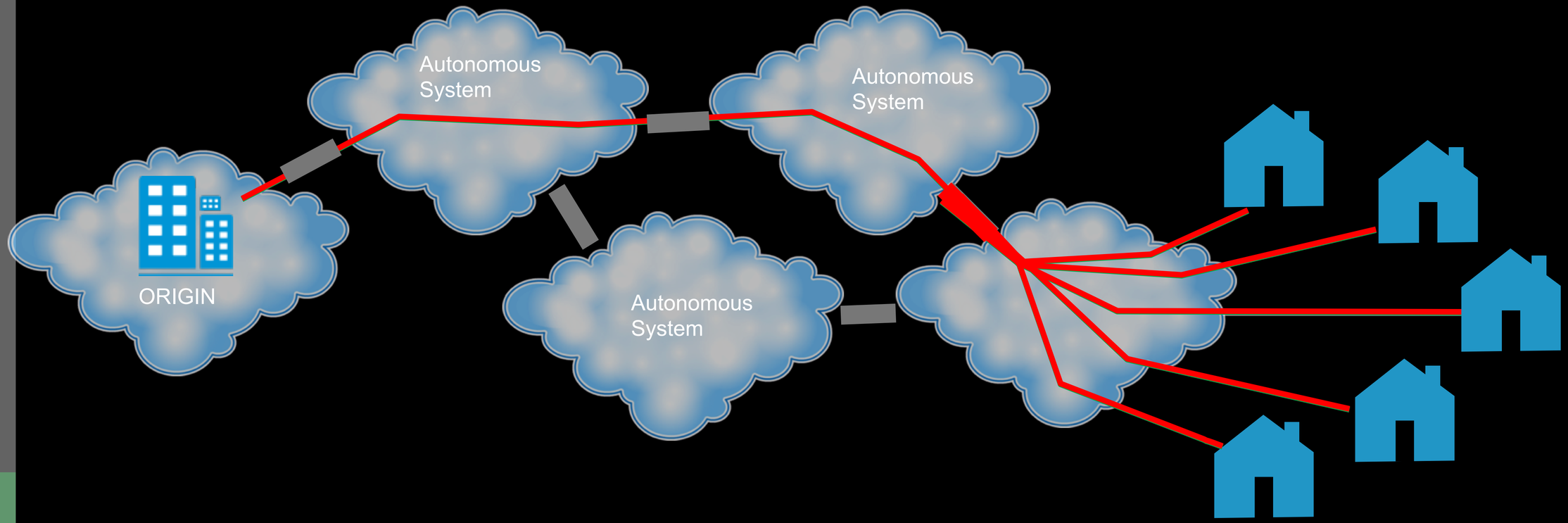
Delivering Content from the Edge



Without the Edge, the path to the content is so long



Traffic Continues to Grow

Todays Peak's are tomorrow's Norm

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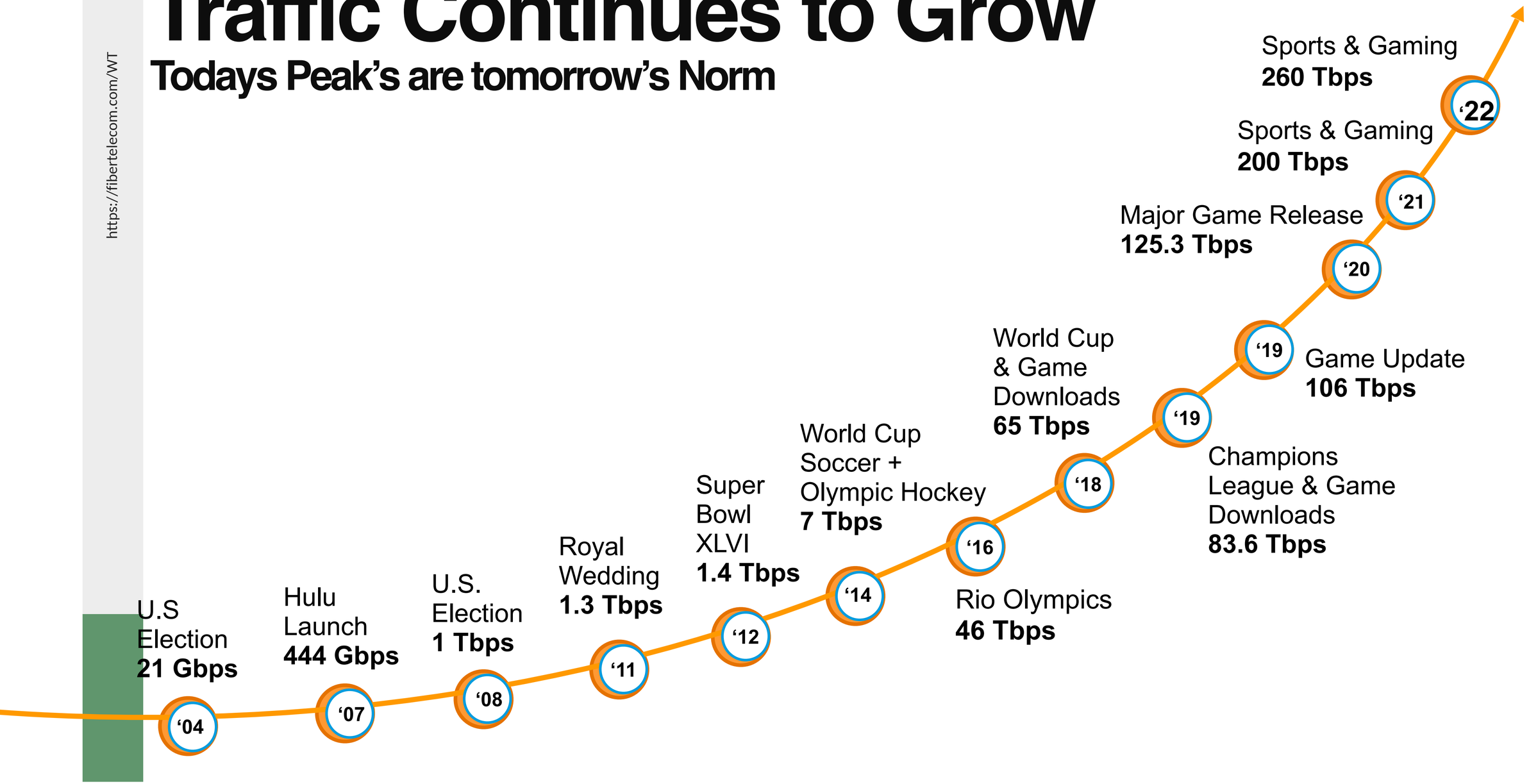


The Future is *Moving to the Edge*, Where:

- all the users are…
- all the devices are…
- most of the bandwidth is…
- most of the bots are…
- and where 5G will be

Akamai's Edge Advantage

Akamai's intelligent edge platform provides better performance, higher reliability, greater scale, lower cost, and stronger security.

Akamai's Intelligent Edge Platform

MASSIVE SCALE

350,000 servers

60+ million hits per second

5+ trillion deliveries per day

120+ terabits per second (200+ peak)

UNPARALLELED DISTRIBUTION

4,200+ locations

1,400+ networks

948 cities

134 countries

DIVERSE FUNCTIONALITY

Content delivery

Traffic optimization

Real-time analytics

Security

Customer apps

INTELLIGENT & PROGRAMMABLE

V8 JavaScript engine

< 5 ms cold start time

1.5 Trillion instantiations on EdgeWorkers (5B daily)

300+ trillion API requests last year

What is a Content Distribution Network

- RFCs and Internet Drafts define a “CDN” as:
- Content Delivery Network or Content Distribution Network. A type of content network in which the content network elements are arranged for more effective delivery of content to clients.

- Briefly:
- A CDN is an overlay network, designed to delivery content from the *optimal location*
- Very Generally: Users in Tokyo should go to a server in Tokyo, users in Frankfurt go to a server in Frankfurt

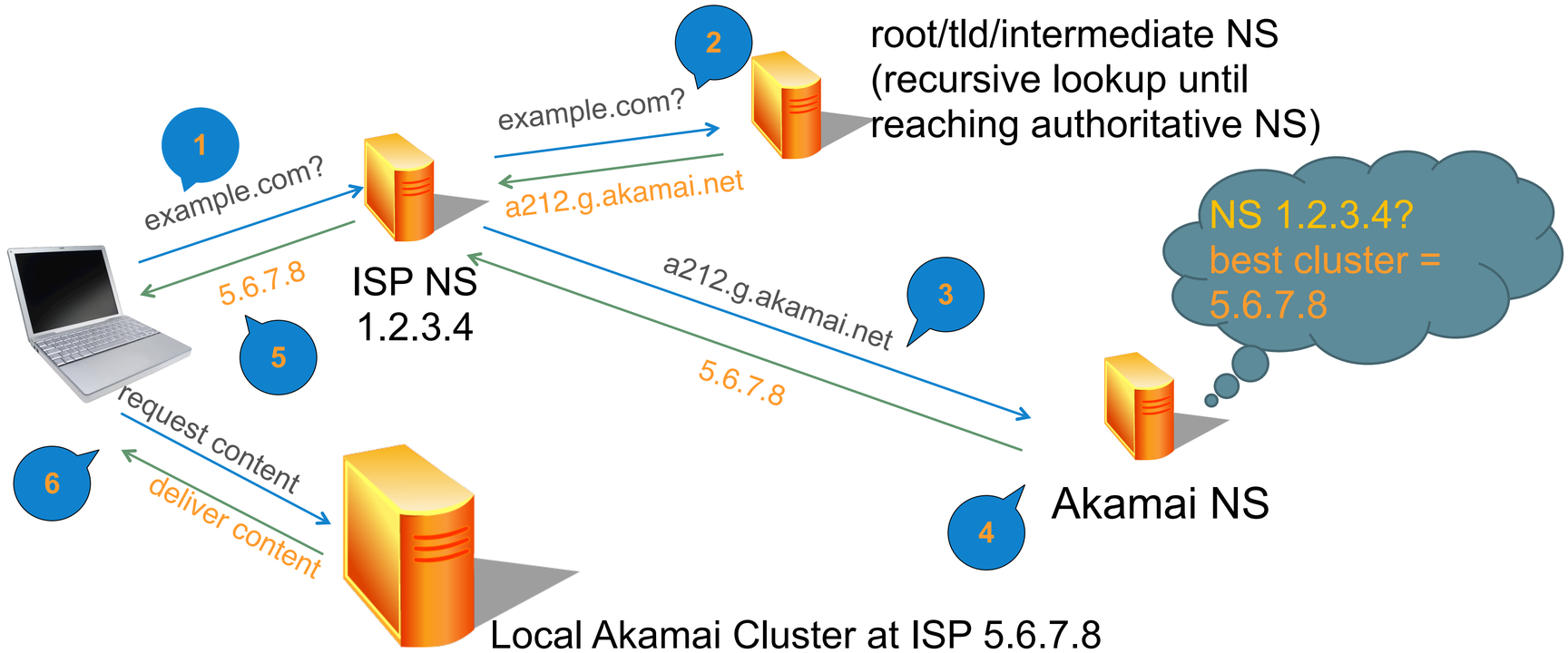
How CDNs Work

- When content is requested from CDNs, the user is directed to the optimal server
- There are 2 common ways to do that:

DNS based: the CDN decides the best location to serve content from based on the resolving name server it receives the DNS request from, and replies with the optimal server

Anycast: the content is served from the location the request is received (easy to build, requires symmetric routing to work well)

Mapping (simplified)



1. End-user requests www.example.com from ISP NS
2. ISP NS recursively looks up www.example.com being referred to authoritative Akamai NS (by cname)
3. ISP NS asks authoritative Akamai NS
4. Akamai NS looks up the IP of requestor (ISP NS) and replies with IP of optimal cluster to serve content
5. ISP NS replies to end-user who
6. Requests content from the optimal cluster

How Akamai Works

- When content is requested from Akamai, multiple criteria is examined to choose the optimal server:
    - Latency & Packet Loss
    - CPU load, memory, and HD space on server
    - Network utilization
- Akamai's CDN is comprised of distinct, geographically & topologically disparate nodes:
    - AANP
    - PNI
    - IXs
    - Transit

Akamai Accelerated Network Partner (AANP)

- Deployment of Akamai edge servers direct in ISP networks
- Eyeball networks are able to receive the *fastest access* to some of the most popular content
- Deliver peak performance for maximum *competitive advantage*
- Reduce *transit* bandwidth expense
- Increase subscriber *satisfaction*
- Take full advantage of technical and marketing *support*

Predictability

Performance

Control

Savings

Deployment of Akamai Accelerated Network Partner (AANP)

https://fibertelecom.com/WT

a network operator installs Akamai caching servers inside its network data centers

Akamai provides

- Faster download for end-users
- Hardware: caching servers
- Software: edge server intelligence
- Content: customers' published assets
- Access to AANP portal for dashboards
- Network monitoring tools and support 24/7
- Marketing and technical support

Partner provides

- Network bandwidth towards end users
- Internet connectivity for filling the caches
- Colocation space, racks, power
- Two public IP addresses per server
- Footprint information through BGP feeds
- Clear maintenance and shipping procedures
- Occasional hands & eyes for maintenance

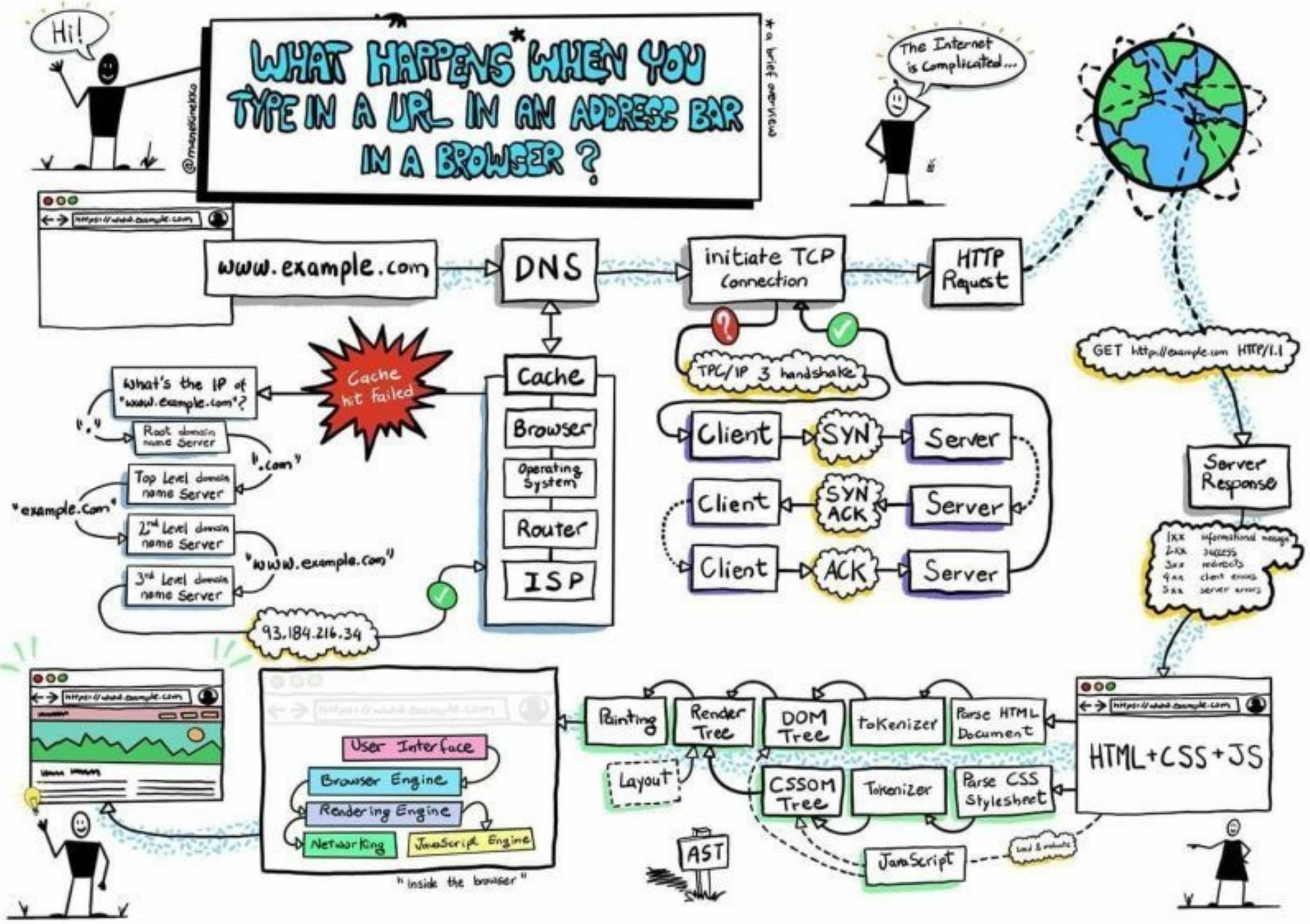
TODAY
Akamai edge: presenti nelle maggiori città
Metropolitane – Presenza DNS ISPs

7675 servers
37 PoPs

NEXT:
Distribuzione DNS (virtuali)

Cluster size: higher due to heavy library


Akamai


Hi!
@mariannekiko
WHAT HAPPENS* WHEN YOU TYPE IN A URL IN AN ADDRESS BAR IN A BROWSER ?
*a brief overview
The Internet is Complicated...
www.example.com
DNS
initiate TCP connection
HTTP Request
GET http://example.com HTTP/1.1
Server Response
TPC/IP 3 handshake
Client
SYN
Server
Client
SYN ACK
Server
Client
ACK
Server
Cache
Browser
Operating System
Router
ISP
Cache hit failed
What's the IP of "www.example.com"?
Root domain name Server
Top Level domain name Server
2nd Level domain name Server
3rd Level domain name Server
"."
".com"
"example.com"
"www.example.com"
93.184.216.34
1XX informational message
2XX success
3XX redirects
4XX client errors
5XX server errors
HTML+CSS+JS
Parse HTML Document
tokenizer
DOM Tree
Render Tree
Painting
Layout
Parse CSS Stylesheet
Tokenizer
CSSOM Tree
JavaScript
AST
User Interface
Browser Engine
Rendering Engine
Networking
JavaScript Engine
"inside the browser"

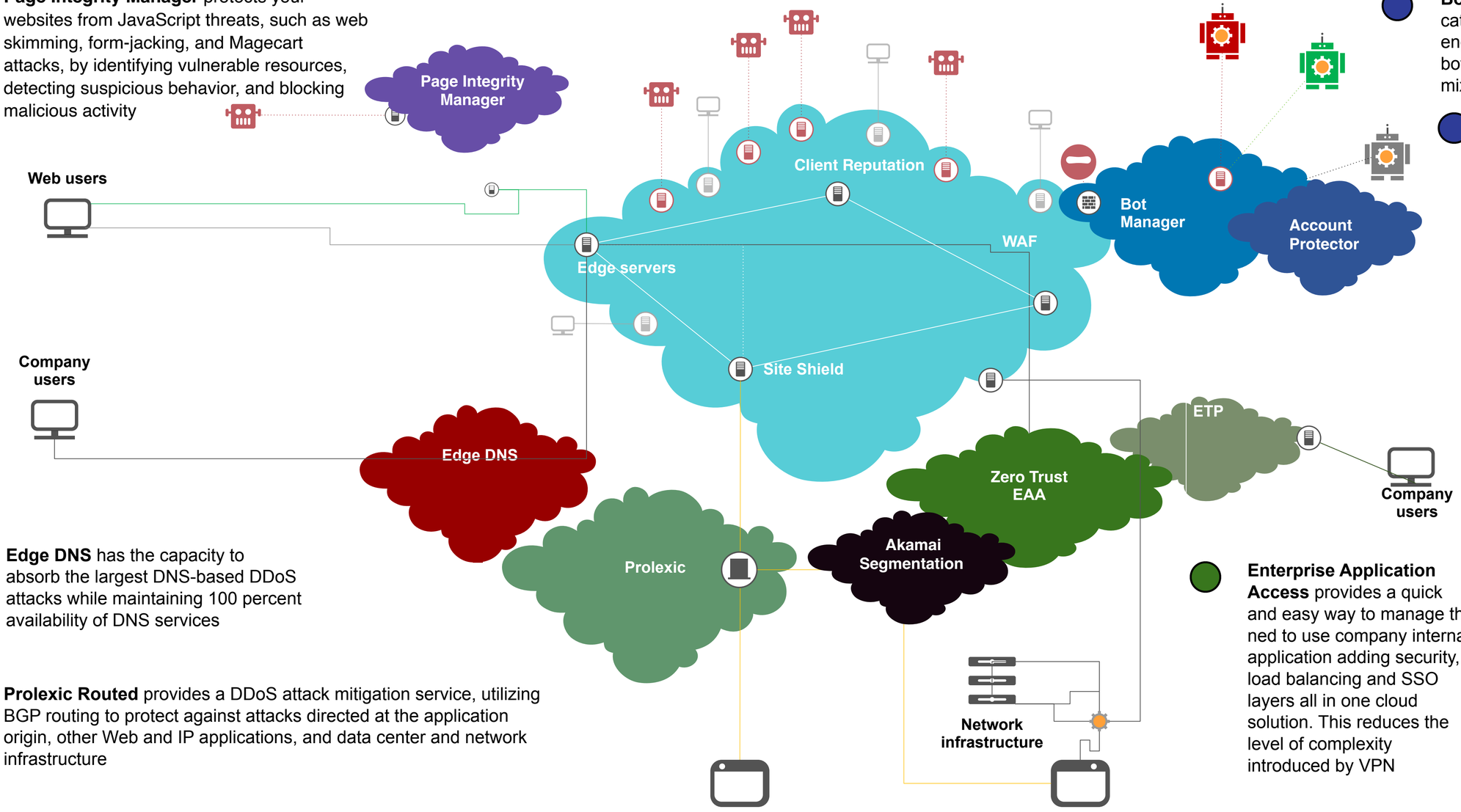
Platform Complete View

App and API Protector provides always-on protection for high value web applications and websites, stopping DDoS and Web attacks at the edge of the network without impacting application performance. **Siteshield** provides the list of Akamai Subnets to implement ACL on the origin. Client Reputation provides a risk based scoring system of IP addresses

Page Integrity Manager protects your websites from JavaScript threats, such as web skimming, form-jacking, and Magecart attacks, by identifying vulnerable resources, detecting suspicious behavior, and blocking malicious activity

Bot Manager leverages the power of bot categorization and real time detection engine to correctly manage the incoming bots, either good ones, bad ones or mixed.

Account Protector detects when fraudsters impersonate legitimate account owners, and launch mitigation actions from the Edge (Account TakeOver)



Secure Internet Access leverages the power of Akamai Security Intelligence and distributed DNS OSINT to provide protection against information exfiltration through malware, phishing, C&C and ransomware, also with SWG methodology

Edge DNS has the capacity to absorb the largest DNS-based DDoS attacks while maintaining 100 percent availability of DNS services

Enterprise Application Access provides a quick and easy way to manage the ned to use company internal application adding security, load balancing and SSO layers all in one cloud solution. This reduces the level of complexity introduced by VPN

Akamai Segmentation stops Ransomware with Network Segmentation, by controlling east/west traffic to reduce your data center and cloud attack surface

Prolexic Routed provides a DDoS attack mitigation service, utilizing BGP routing to protect against attacks directed at the application origin, other Web and IP applications, and data center and network infrastructure

Core Data Center Expansion Plan

First 3 sites live in 1H of 2023

Existing Data Centers

Atlanta	Frankfurt	Newark	Tokyo
Dallas	London	Singapore	Toronto
Fremont	Mumbai	Sydney	

2023 Planned Data Centers

Amsterdam	Chicago	Madrid	Osaka	Seattle
Auckland	Jakarta	Miami	Paris	Seoul
Chennai	Los Angeles	Milan	São Paulo	Stockholm
				Washington D.C.

Akamai Accelerated Network Partner (AANP)

bridging the gap between
Content Providers and Internet End Users

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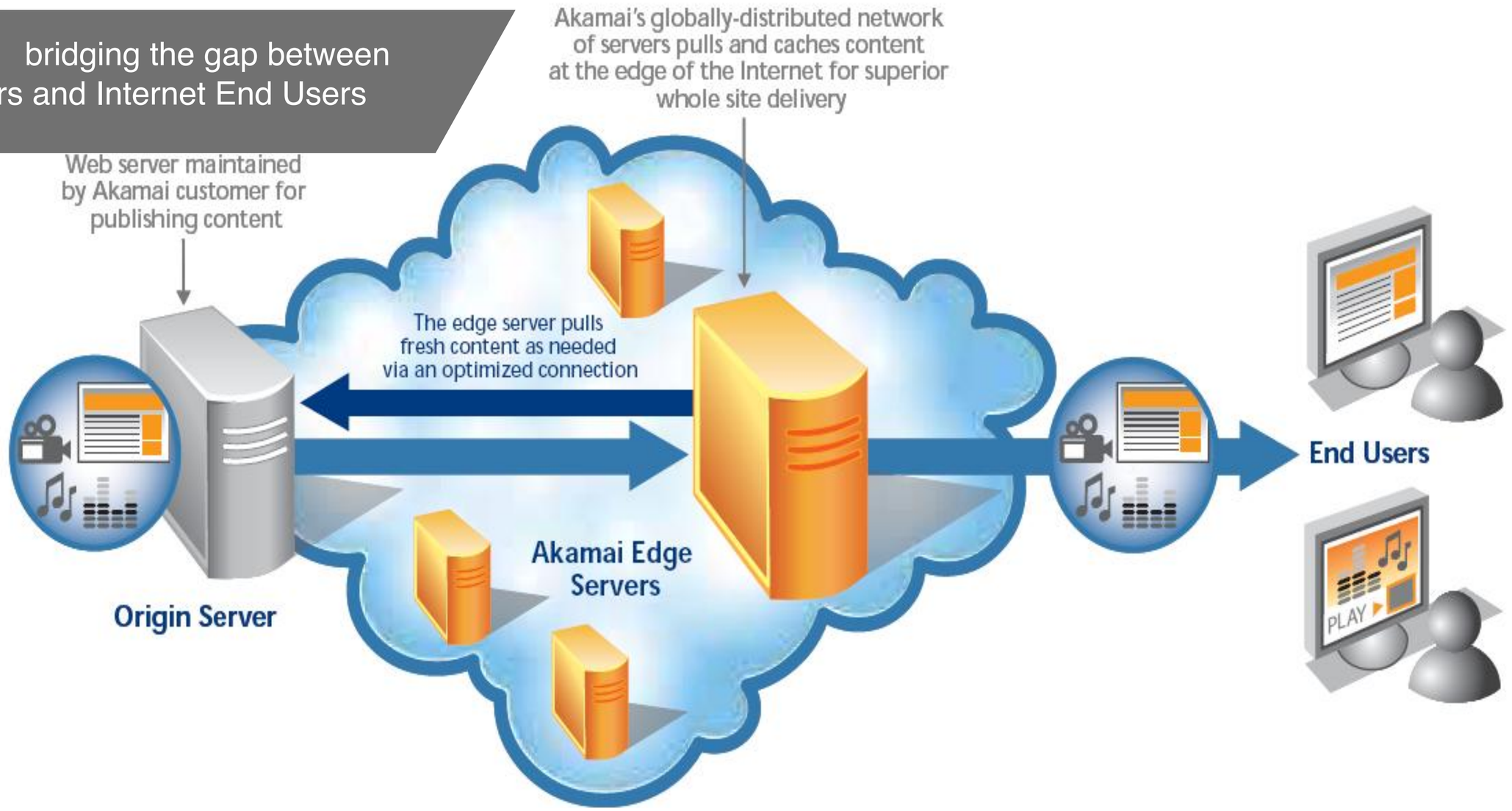


Benefits of Akamai Accelerated Network Partner (AANP)

https://fibertelecom.com/WT

Predictability

- Consistent quality of delivery
- Minimise customer churn
- Steadiness of ingress traffic

Performance

- Better scalability
- Improved Quality of Experience
- Reduced latency

Control

- Mutual agreement on capacity
- Select the end-users to be served
- Visualisation dashboard portal

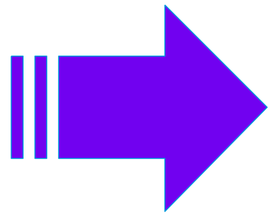
Savings

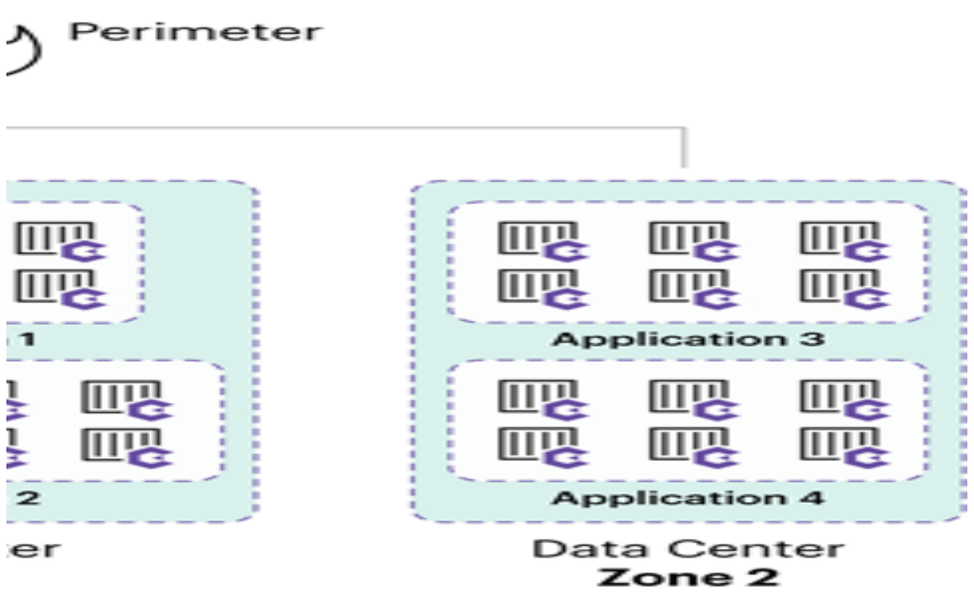
- Maximum network savings
- Lower cost of IP transit bill

Segmentation the old way

Segmentation the new way

It's Time to Software Based Segmentation





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Cloud

https://www.corrierecomunicazioni.it/digital-economy/cloud/costi-cloud-sfida-impegnativa-per-l84-delle-aziende-italiane/

Costi cloud, sfida impegnativa per l’84% delle aziende italiane

Cloud, caos alle porte? Troppe piattaforme ed extra-costi