Power and protect life online

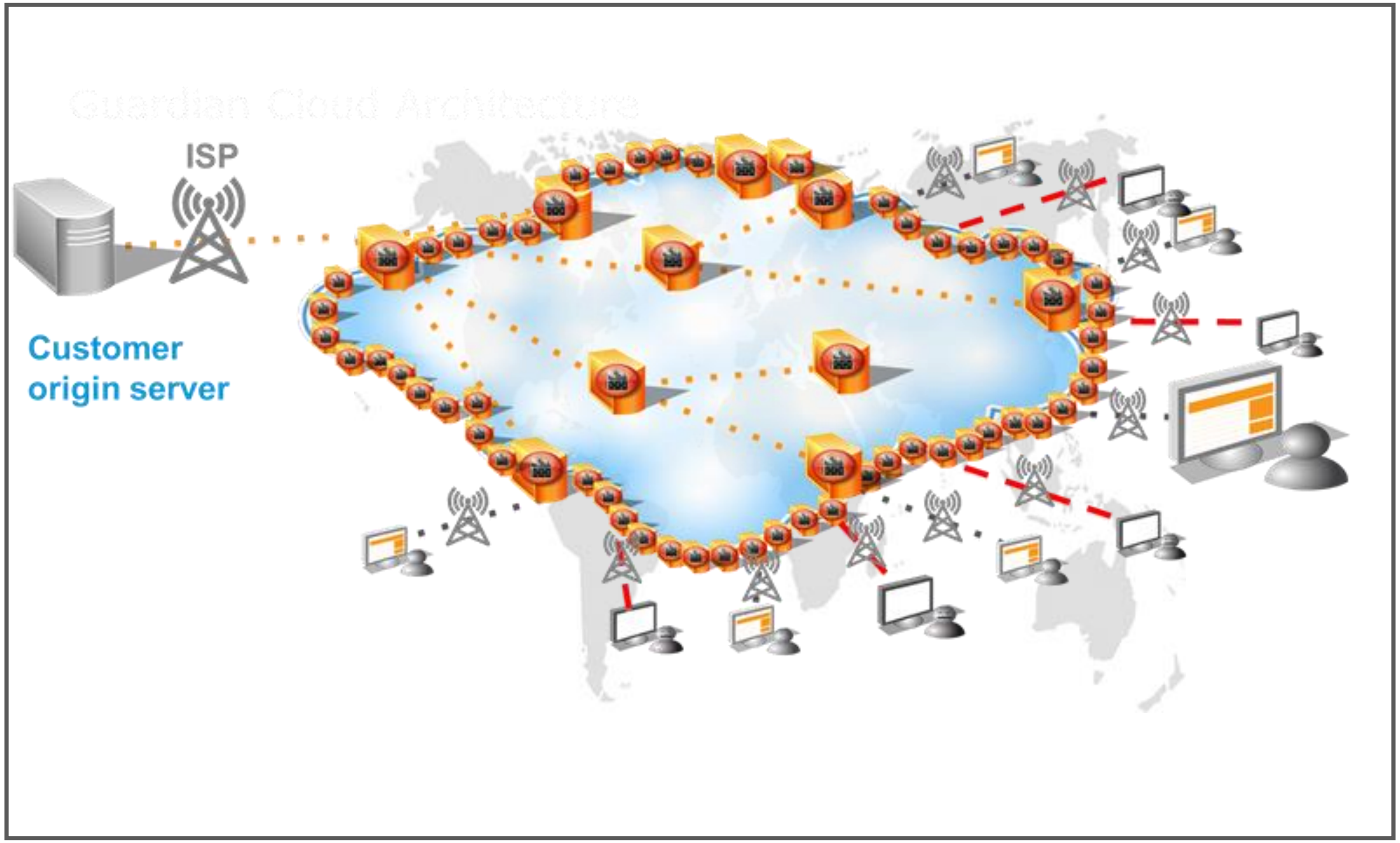
Akamai Services

Data Flow & Data Transfers

Delivery and Security Service

Ion, DSA, GTM, Media, Kona

Delivery of Web Properties via the Akamai Platform



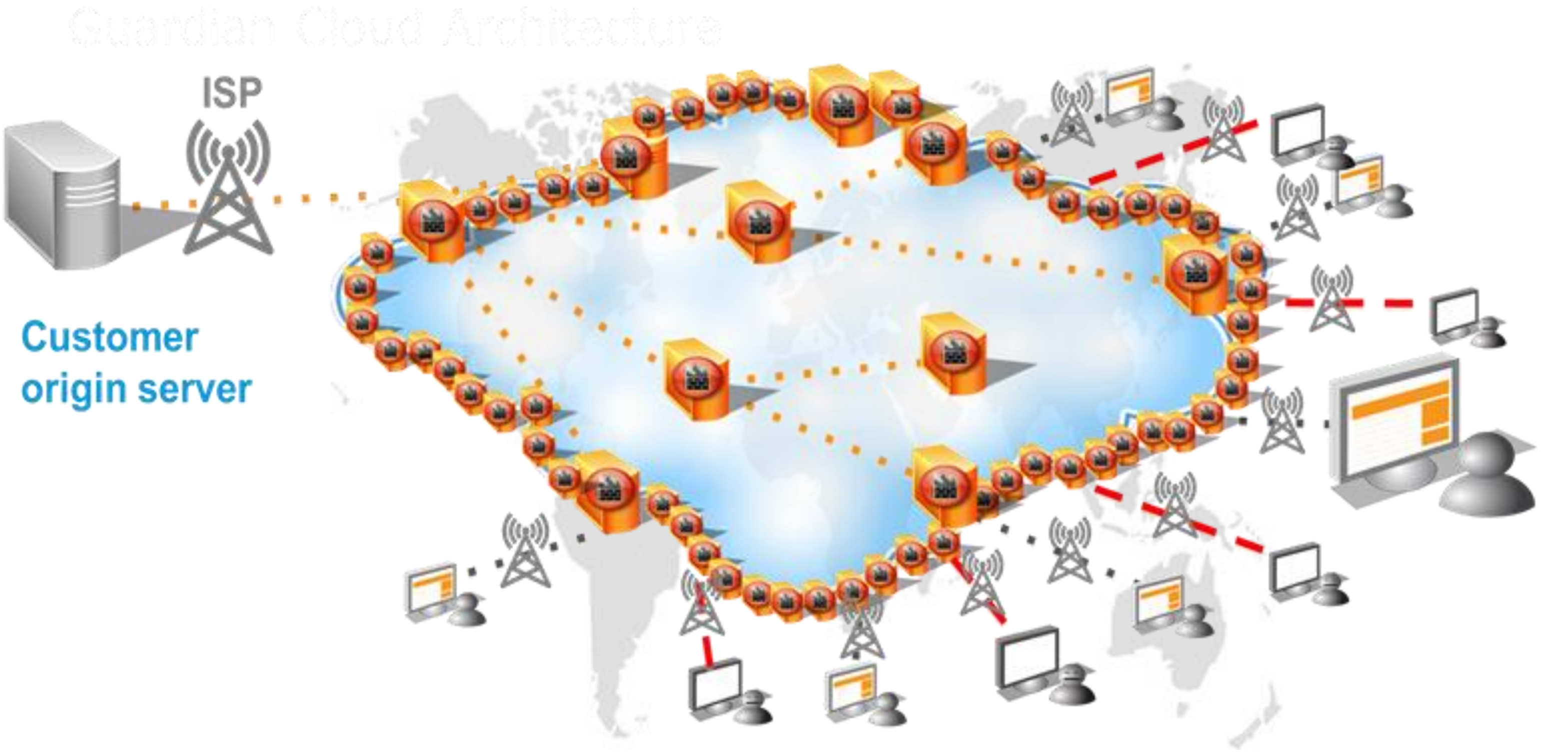
- The end-user request accesses the Akamai edge server that is closest to the end user. Where the end user is located in the EU, an edge server in the EU will answer the request (grey lines).

- The edge server transmits the request via the Akamai platform to the origin server of the customer. On the way back to the end user, the origin server forwards the web properties via the Akamai platform back to the end user (orange lines).

- The customer chooses the security of its web properties. For sensible web properties, Akamai recommends choosing the Akamai Enhanced TLS Platform for transmission.

- On the Enhanced TLS Platform, the TLS connection is terminated for an instance by Akamai at the edge server to perform routing and mapping and security checks. Immediately thereafter, the TLS connection is reestablished.

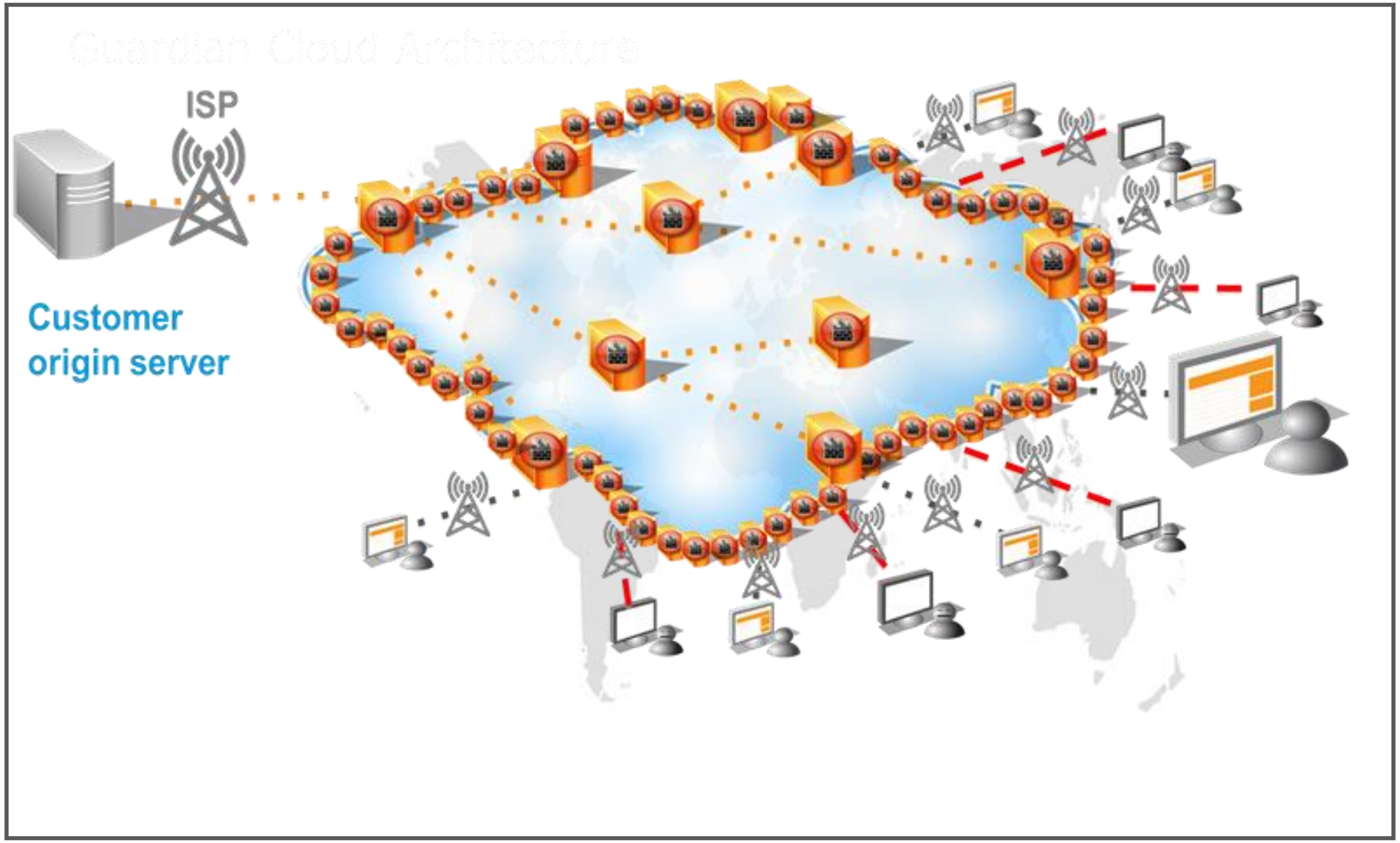
Delivery of Web Properties via the Akamai Platform



- The customer determines whether the web properties are cached/stored on the edge servers or not.

- Where customer's web properties consist of personal data, Akamai recommends choosing a no-cache configuration for such data, to avoid the accessibility of such data by any end users that are accessing the customer's web properties (which is the idea of cache).

Delivery of Web Properties via the Akamai Platform

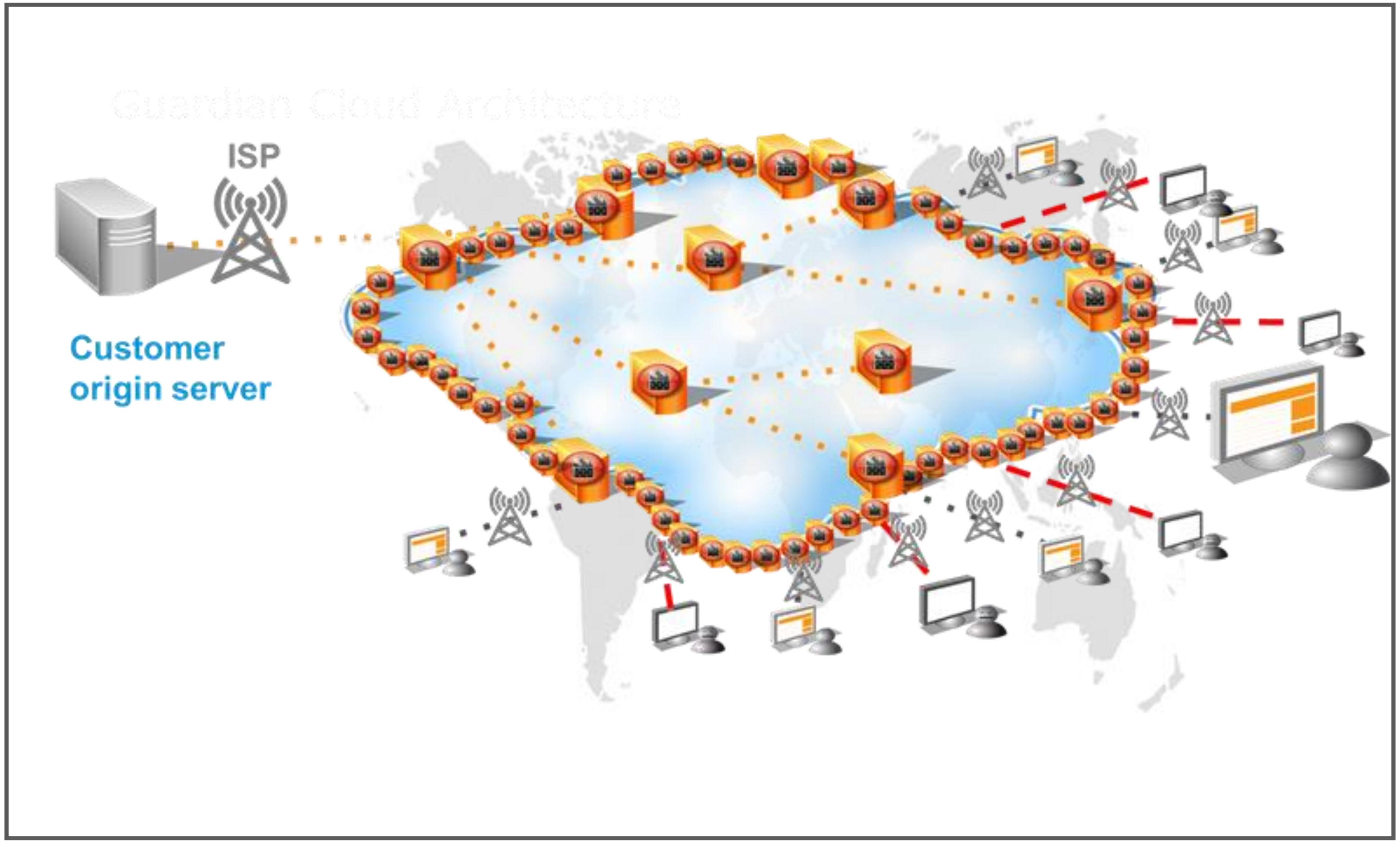


- Where malicious activities are recognized at the edge server, the request is blocked (red lines).

- Where requests are legitimate, they are transmitted via the Akamai platform (grey dotted lines).

- As Akamai does not know when and where an end-user request hits a specific edge server, it does not control which server delivers a given web property or when and where a TLS termination for a given web property occurs.

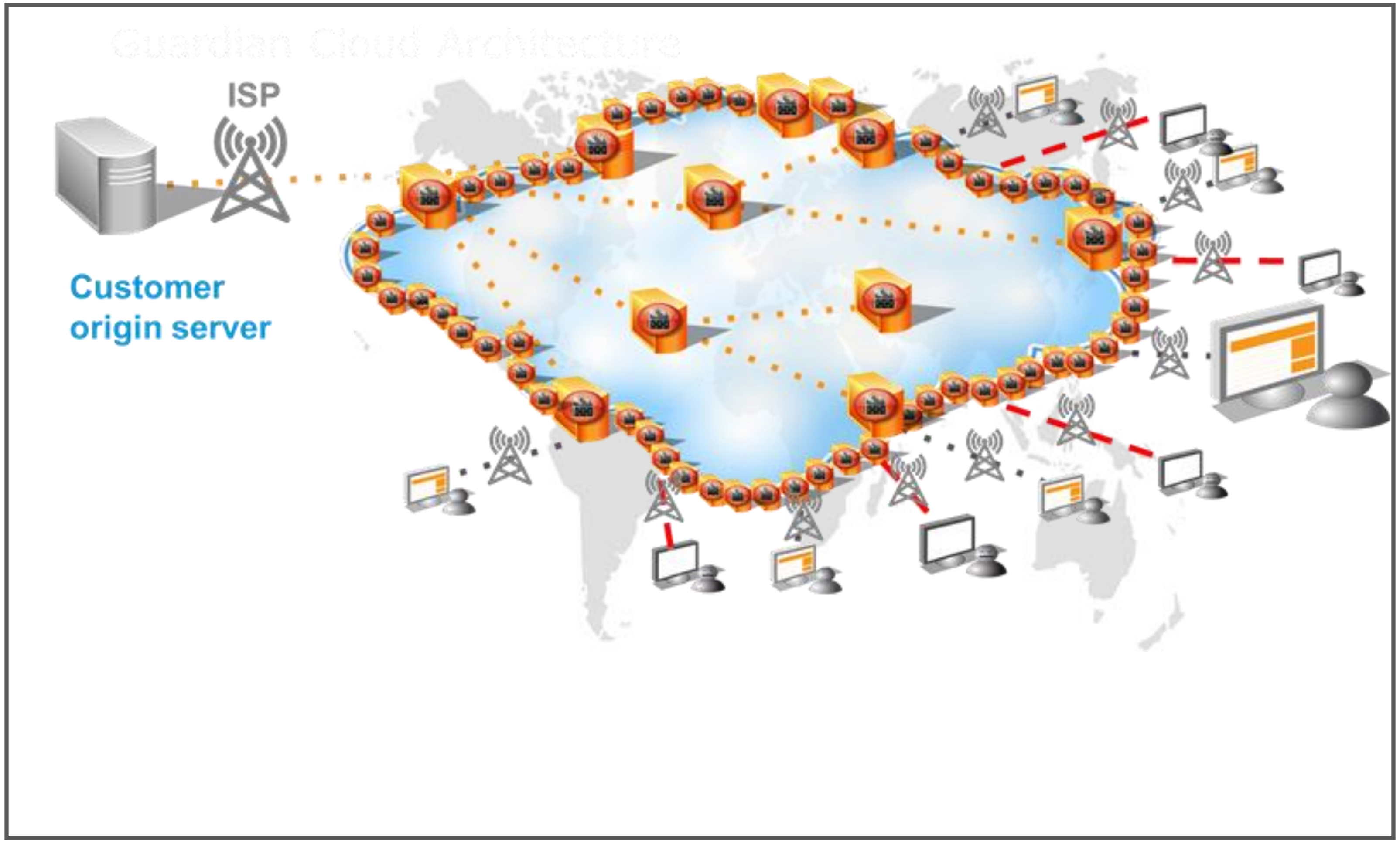
Delivery of Web Properties via the Akamai Platform



- So, by nature of the Akamai platform, the Privacy by Design principle is met: Where an end user located in the EU is requesting web properties of a customer, the web properties and the embedded personal data (if any) are processed on Akamai servers deployed in the EU, except for corner cases in which transmission on EU servers is not possible.

- With more than 100,000 Akamai servers deployed in the EU region, a fast, reliable and secure delivery is ensured within region per default.

Security of Web Properties via the Akamai Platform



- Customer security rules, Akamai rules, and Akamai's threat intelligence are applied locally at the edge server.

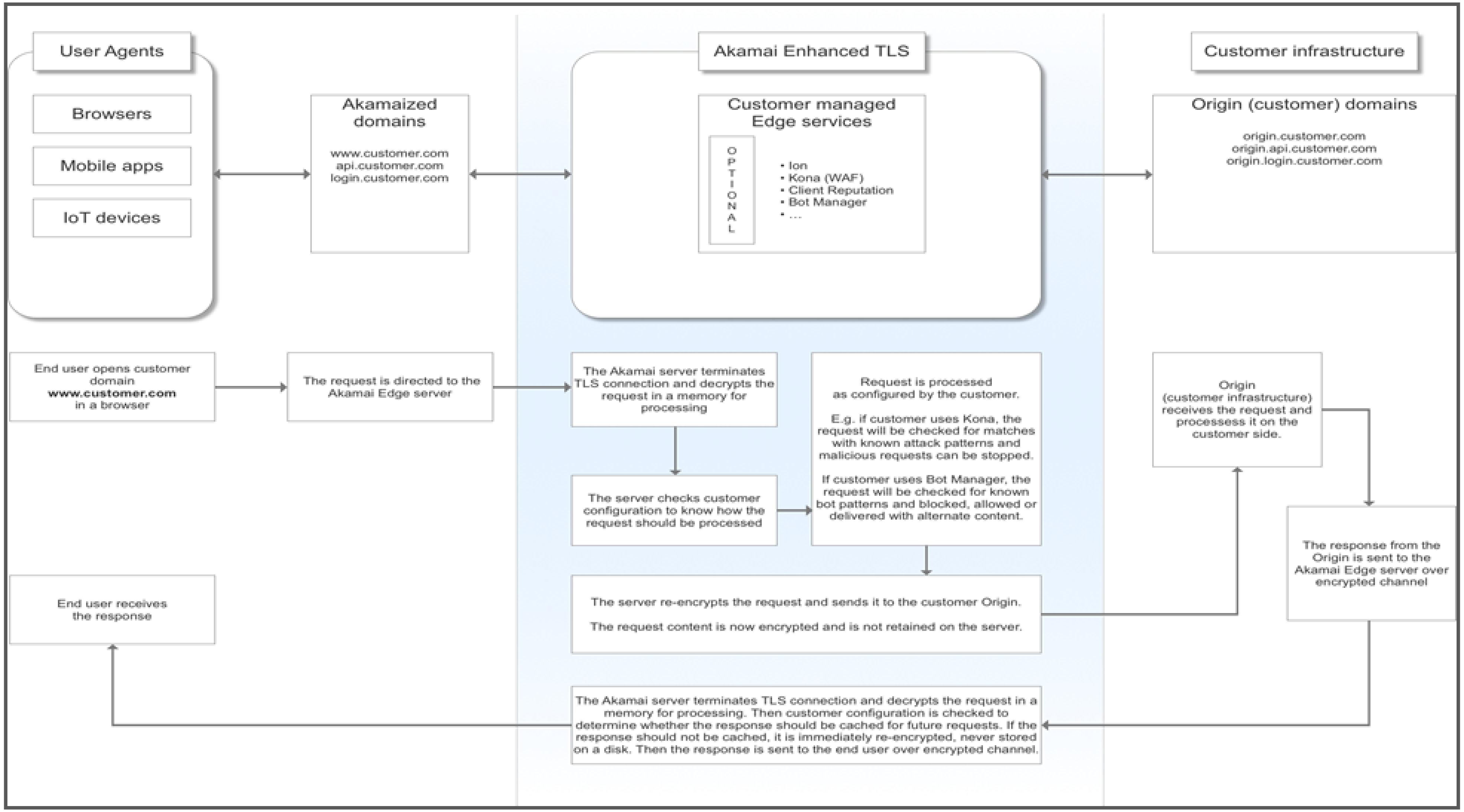
- When an end-user request hits an edge server, the security analytics are performed on the edge server:
  - legitimate requests are transmitted
  - malicious requests are blocked

- For legitimate requests by end users located in the EU, the customer's web properties are processed in the EU. No data is transferred outside the EU, except for corner cases.

- Log files of suspicious requests are transferred to the USA for analytics on Akamai's security systems deployed in the USA.

- The processing of the log files for analytic and service support purposes is outlined on page 31.

Akamai Platform Data Flow



End user opens customer domain **www.customer.com** in a browser

The request is directed to the Akamai Edge server

The Akamai server terminates TLS connection and decrypts the request in a memory for processing

The server checks customer configuration to know how the request should be processed

Request is processed as configured by the customer.

E.g. if customer uses Kona, the request will be checked for matches with known attack patterns and malicious requests can be stopped.

If customer uses Bot Manager, the request will be checked for known bot patterns and blocked, allowed or delivered with alternate content.

The server re-encrypts the request and sends it to the customer Origin.

The request content is now encrypted and is not retained on the server.

Origin (customer infrastructure) receives the request and processess it on the customer side.

The response from the Origin is sent to the Akamai Edge server over encrypted channel

The Akamai server terminates TLS connection and decrypts the request in a memory for processing. Then customer configuration is checked to determine whether the response should be cached for future requests. If the response should not be cached, it is immediately re-encrypted, never stored on a disk. Then the response is sent to the end user over encrypted channel.

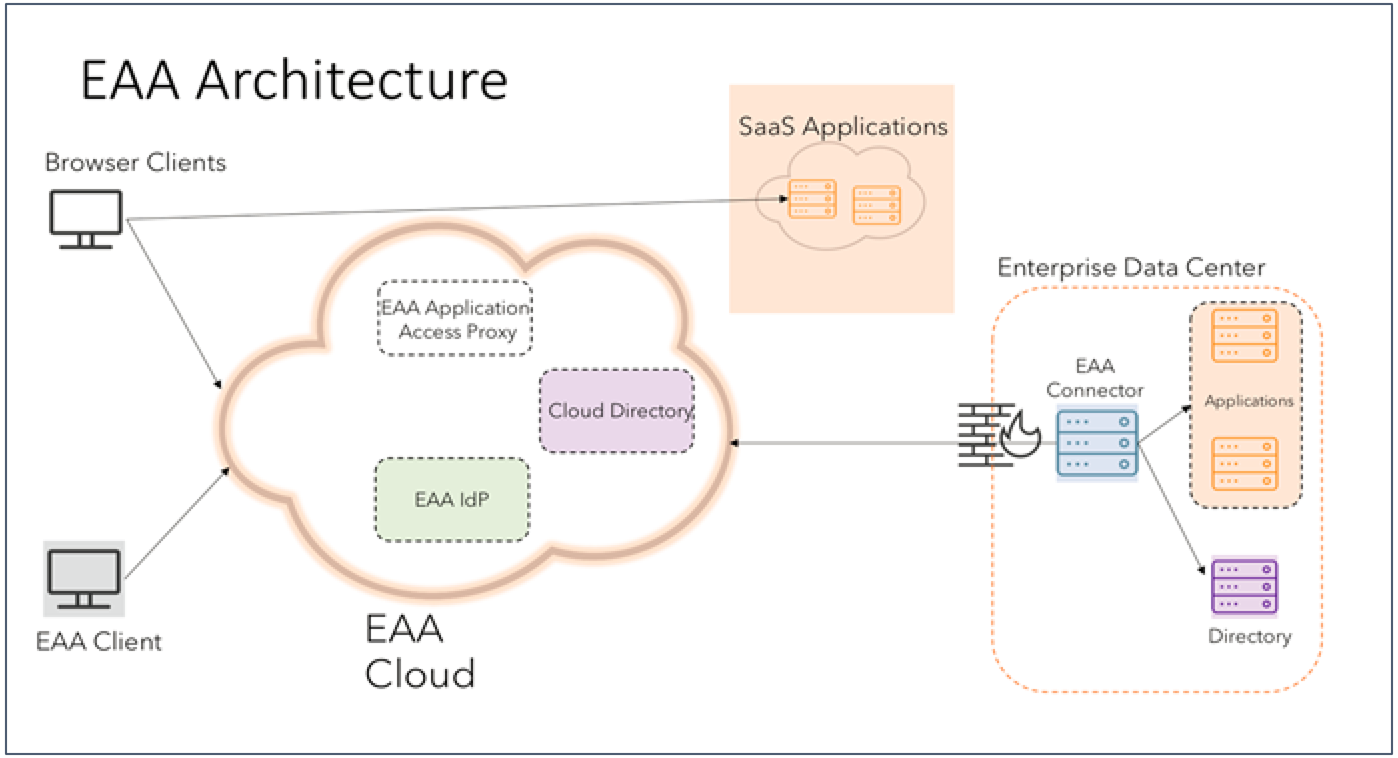
End user receives the response

Enterprise Application Access

EAA

Enterprise Application Access

Based on the Zero Trust principle, EAA's purpose is to ensure that only authorized and authenticated individuals access the applications they need to access.



The EAA Client (running on user's computer) connects to the EAA Cloud (i.e., a proxy that runs in the cloud).

The EAA Connector runs behind the customer's firewall in the customer's data center and continuously makes "outbound" connections through the firewall to the EAA Cloud, checking for incoming client connections.

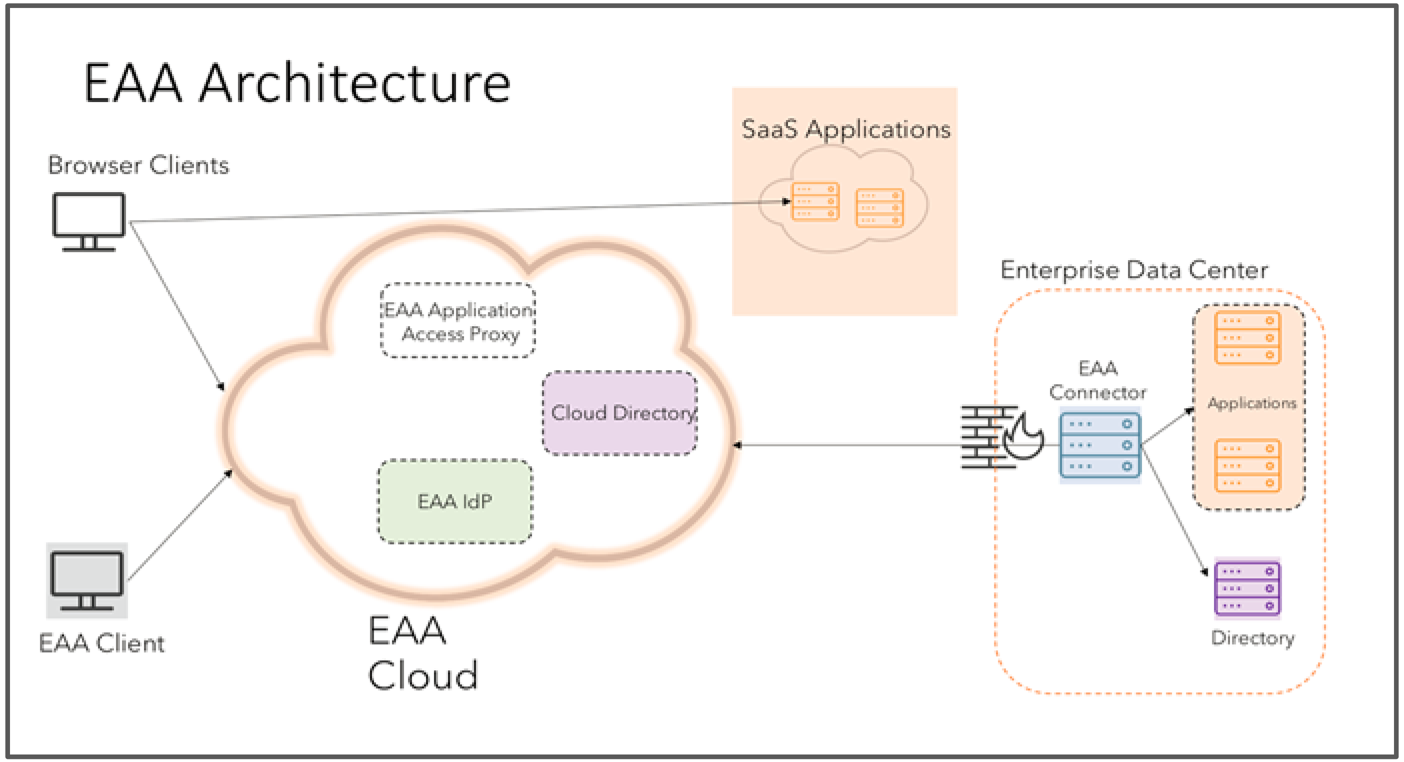
When the Connector detects an inbound connection from an EAA Client to the EAA Cloud, the Connector performs the dual tasks of

(i) **Authentication** (i.e., "who are you?") and

(ii) **Authorization** (i.e., "what are you permitted to do upon access?"). The Connector relies on the customer's employee directory and IDT to authenticate and authorize.

Then, the Connector "stitches together" the two connections, providing a tunnel through the firewall and into the customer's networks so that the user can access authorized resources.

Enterprise Application Access



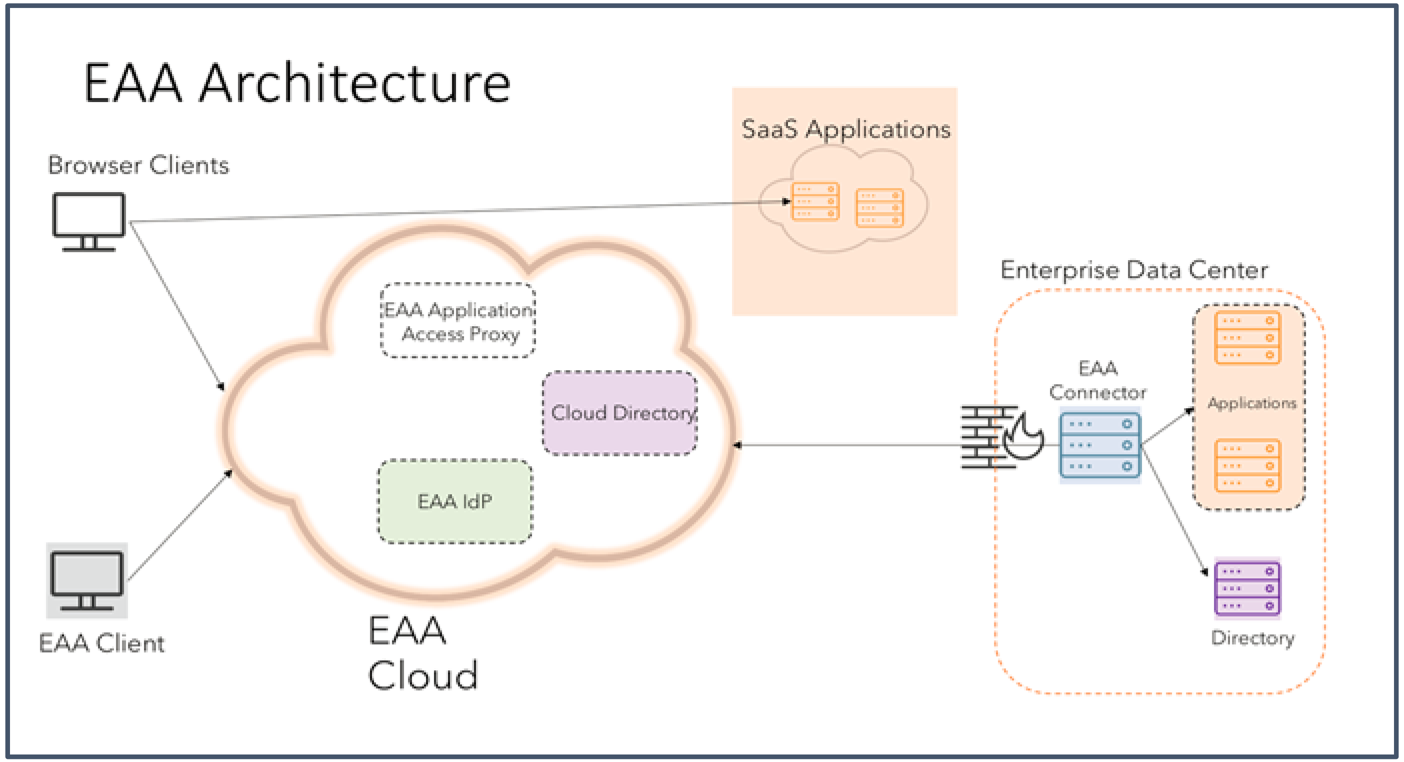
Front-End Authentication: Occurs between the user’s browser and the EAA Cloud server to which the user connects to use the EAA service. Usually, this step prompts the user for a username and password (if the user has not already authenticated to the EAA SSO service).

Back-End Authentication: Occurs between the EAA Cloud and the Application server. This process uses the authentication method that the requested application is programmed to accept (e.g., Kerberos, SAML, etc.).

Authorization: Whereas Authentication confirms who the requestor is, Authorization confirms which resources the requestor is permitted to access.

The Front-End Authentication ensures that EAA collects the information needed to craft the proper Back-End authentication method – so the user only logs in once.

Enterprise Application Access

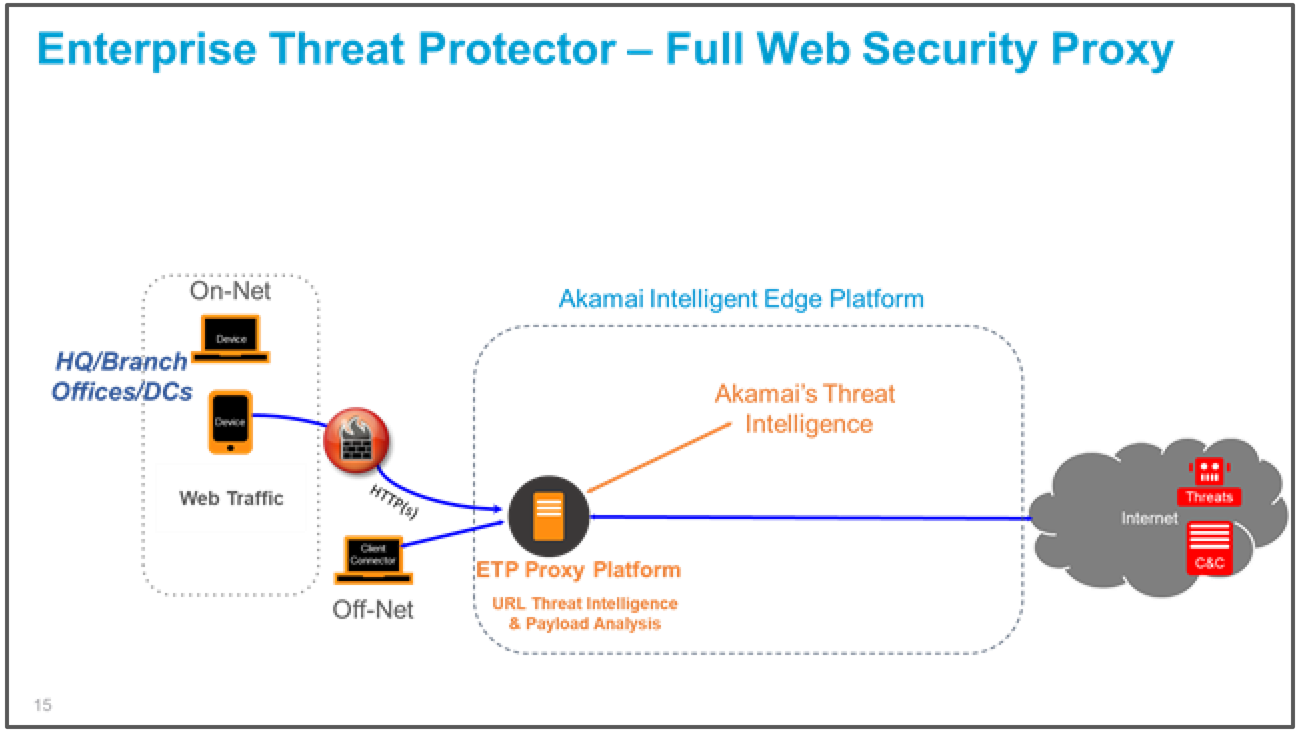


- The customer’s directory with the employee corporate contact details gets copied into the EAA Cloud.
- The EAA Cloud runs on AWS, and EAA can be configured so that the customer’s employee directory in the EAA Cloud is stored in-region.
- With this Privacy by Design feature, EU personal data for legitimate access is processed within the EU only.
- Logs of malicious events (e.g., brute-force attack) are transferred to the USA and analyzed in Akamai’s security analytic systems. Such events are not performed by individuals, but by bots, so the related IP addresses are not to be classified as personal data.

Enterprise Threat Protector

ETP

Enterprise Threat Protector



Enterprise Threat Protector – Full Web Security Proxy

ETP offers different use cases:

- DNS-based threat detection only (for companies with full security stack inside)
- DNS + suspicious web traffic via security proxy (companies who are in the cloud transformation phase or have completed this phase)
- DNS + all traffic via security proxy (companies who want additional visibility and security on top of cloud security)

ETP protects at 3 layers:

- DNS inspection at DNS servers
- URL inspection at ETP proxy platform
- Payload analysis at ETP proxy platform

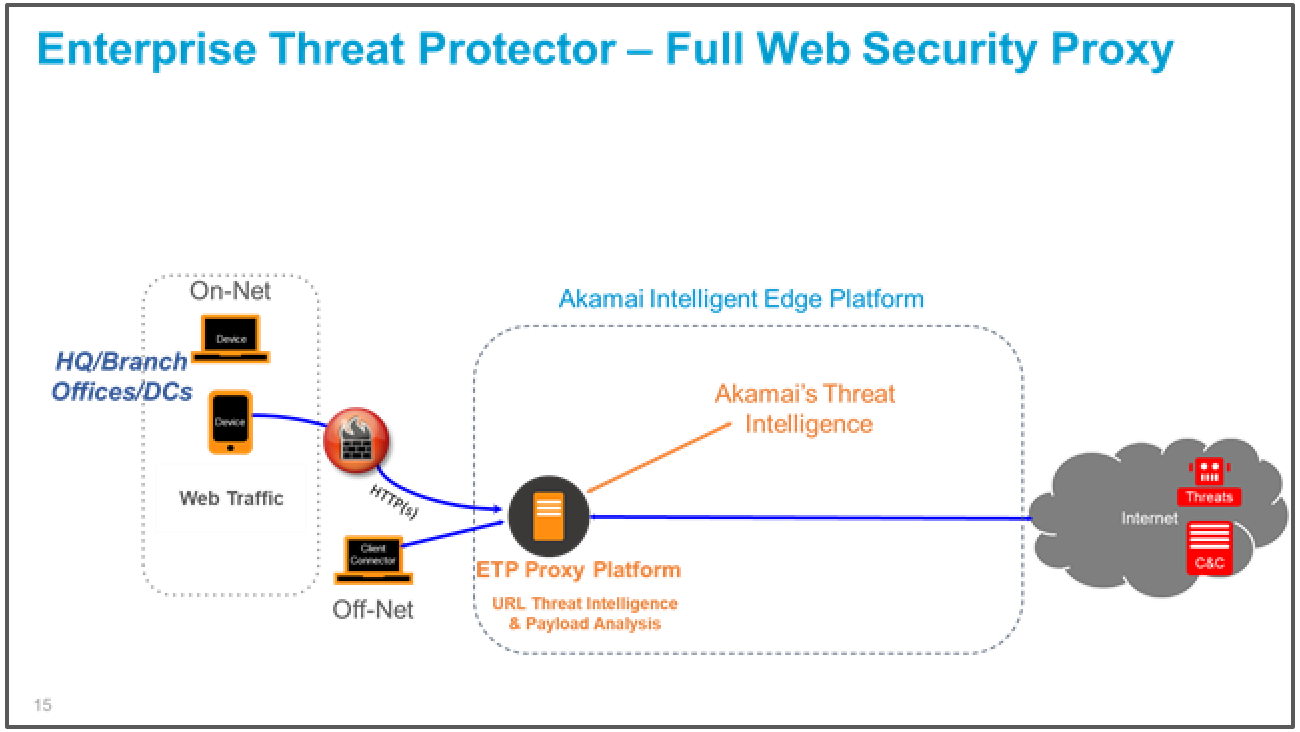
Malicious traffic is determined in accordance with

- Customer rules
- Akamai rules, if desired
- Akamai's threat intelligence

Recognized malicious traffic is blocked at the Akamai platform.

Legitimate traffic is forwarded to the internet.

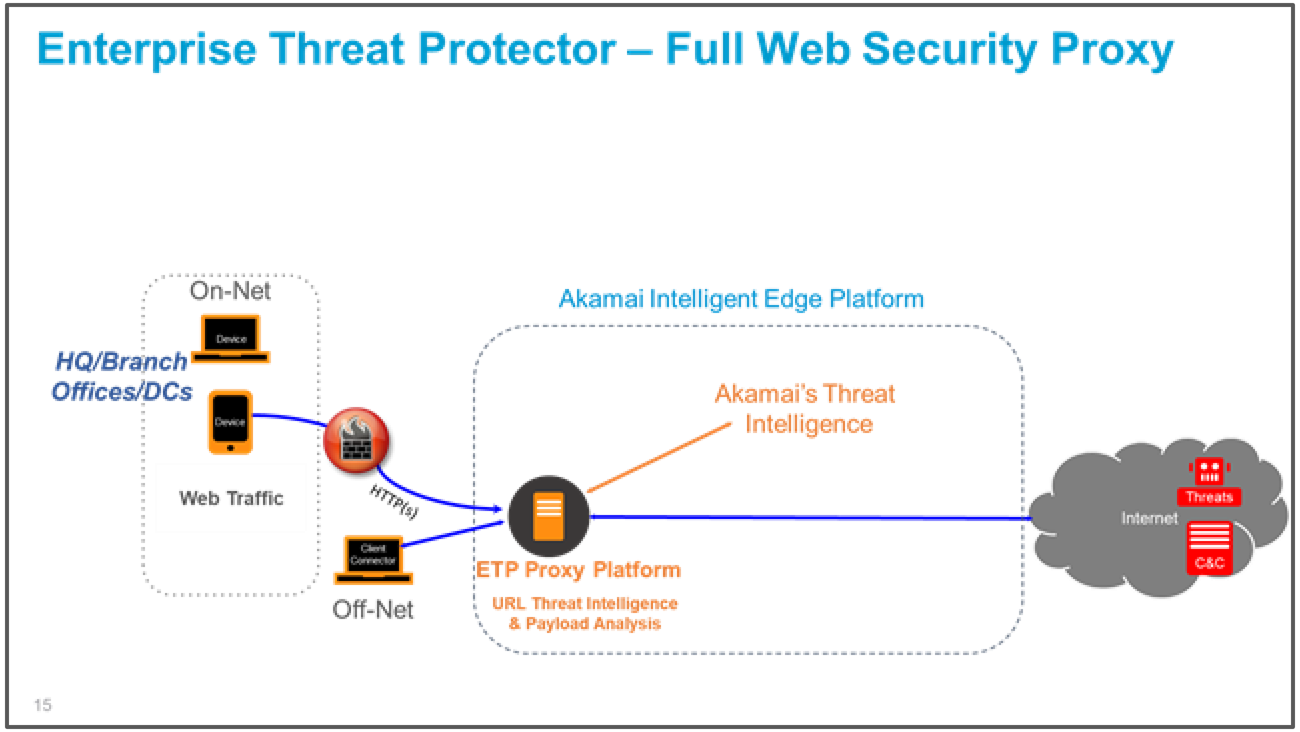
Enterprise Threat Protector



Enterprise Threat Protector – Full Web Security Proxy

- By design of the Akamai platform, end-user requests within the EU are answered by DNS servers deployed in the EU.
- Akamai’s threat intelligence is applied locally at the edge server. Legitimate traffic is passed through to the global internet.
- Logs are generated on the edge server when performing ETP services and transferred to Akamai’s log collection system in the USA for traffic and security analytics (see page 31).

Enterprise Threat Protector



Enterprise Threat Protector – Full Web Security Proxy

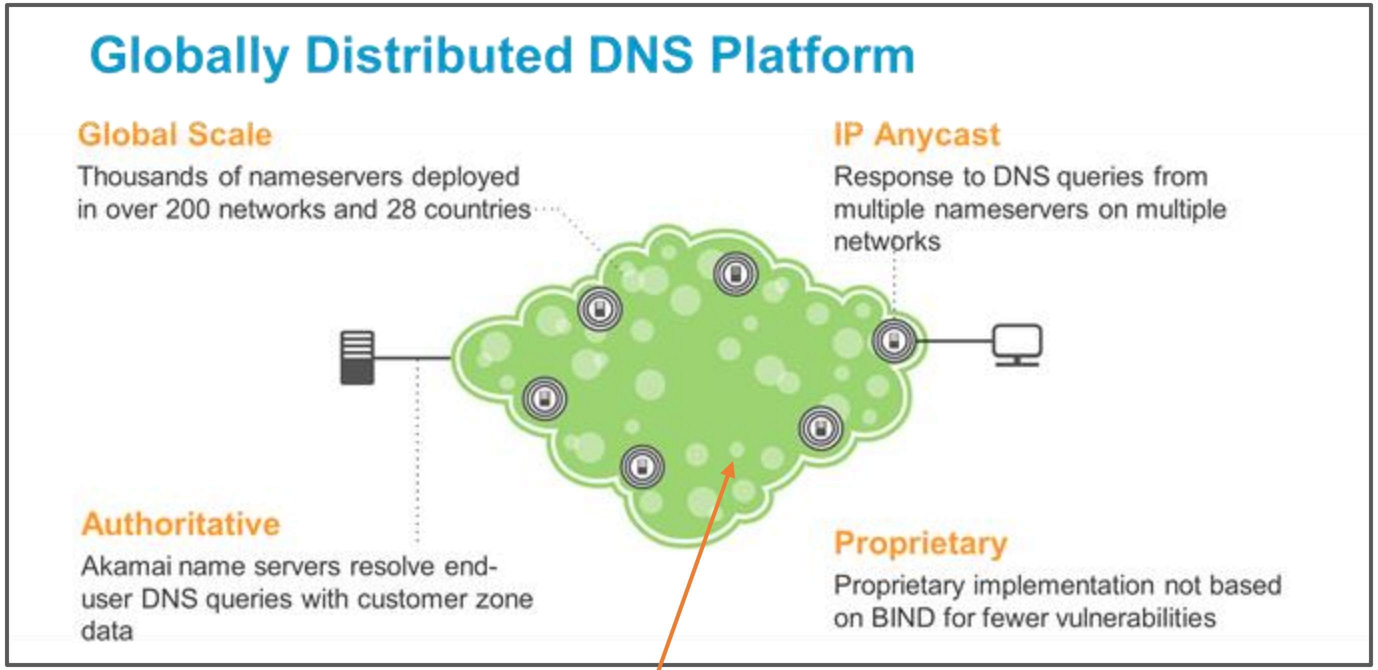
- Data elements embedded in the logs:
  - End-user IP address
  - Time stamp
  - DNS data
  - Browser data
  - Network data

- The end-user IP address may relate to a corporate proxy. So it is not necessarily classified as personal data.

Edge DNS

Global Traffic Management

Edge DNS and Global Traffic Management



Globally Distributed DNS Platform

Global Scale
Thousands of nameservers deployed in over 200 networks and 28 countries

IP Anycast
Response to DNS queries from multiple nameservers on multiple networks

Authoritative
Akamai name servers resolve end-user DNS queries with customer zone data

Proprietary
Proprietary implementation not based on BIND for fewer vulnerabilities

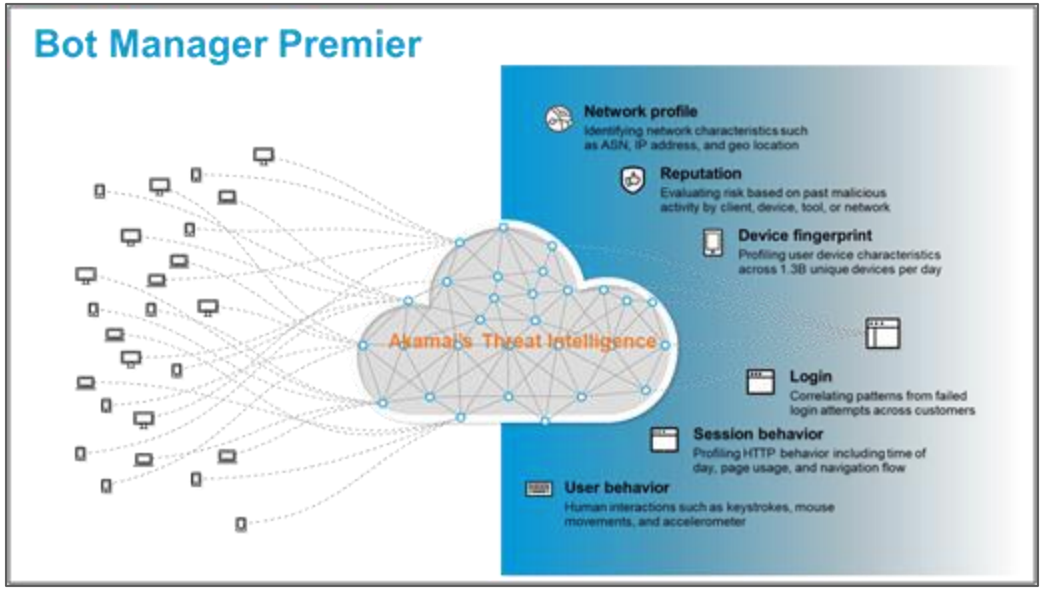
Akamai's Threat Intelligence

- Edge DNS and Global Traffic Management are Akamai's external authoritative DNS services.
- Edge DNS provides DDoS resilient zone management.
- Global Traffic Management provides secure and extensible Layer 3 global service load balancing.
- Personal data processed is end-user IP address. IP address might relate to a corporate proxy and may not necessarily be classified as personal data.
- The customer determines security rules to apply. Akamai may apply additional rules. Finally, Akamai's threat intelligence is applied, and the rules and the intelligence are rolled out to the DNS servers.
- In accordance with the rules and the intelligence, safe requests are forwarded to the internet and malicious requests are blocked.

Bot Manager Premier

Account Protector and Page Integrity Manager

Bot Manager Premier



Bot Manager Premier

Akamai's Threat Intelligence

Network profile
Identifying network characteristics such as ASN, IP address, and geo location

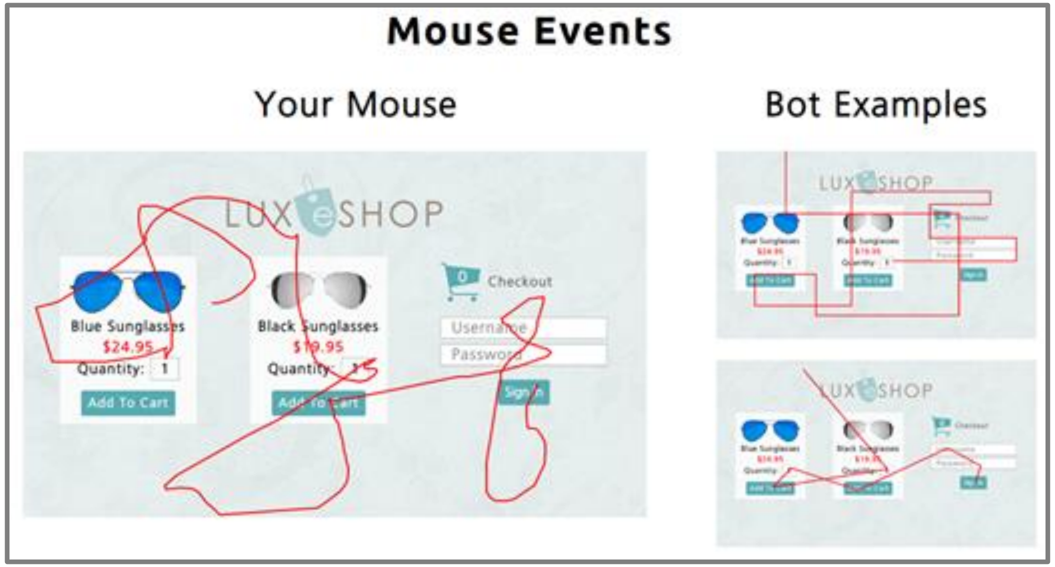
Reputation
Evaluating risk based on past malicious activity by client, device, tool, or network

Device fingerprint
Profiling user device characteristics across 1.3B unique devices per day

Login
Correlating patterns from failed login attempts across customers

Session behavior
Profiling HTTP behavior including time of day, page usage, and navigation flow

User behavior
Human interactions such as keystrokes, mouse movements, and accelerometer



Data is collected to determine whether access has been made by a **human or a bot.**

- Data elements include network, browser, and behavior data.
- Akamai's threat intelligence is applied.
- End-user IP addresses are pseudonymized data for Akamai.
- Akamai does identify bots, but does not identify the end users.
- Akamai is not creating end-user profiles.

Web property's access is forwarded or blocked, in accordance with the customer's security rules, Akamai's rules and Akamai's threat intelligence.

The cookie technology used is strictly necessary for state-of-the-art operation of the customer's website and offering of its services.

Bot Manager Premier has been developed with Privacy by Design in mind.

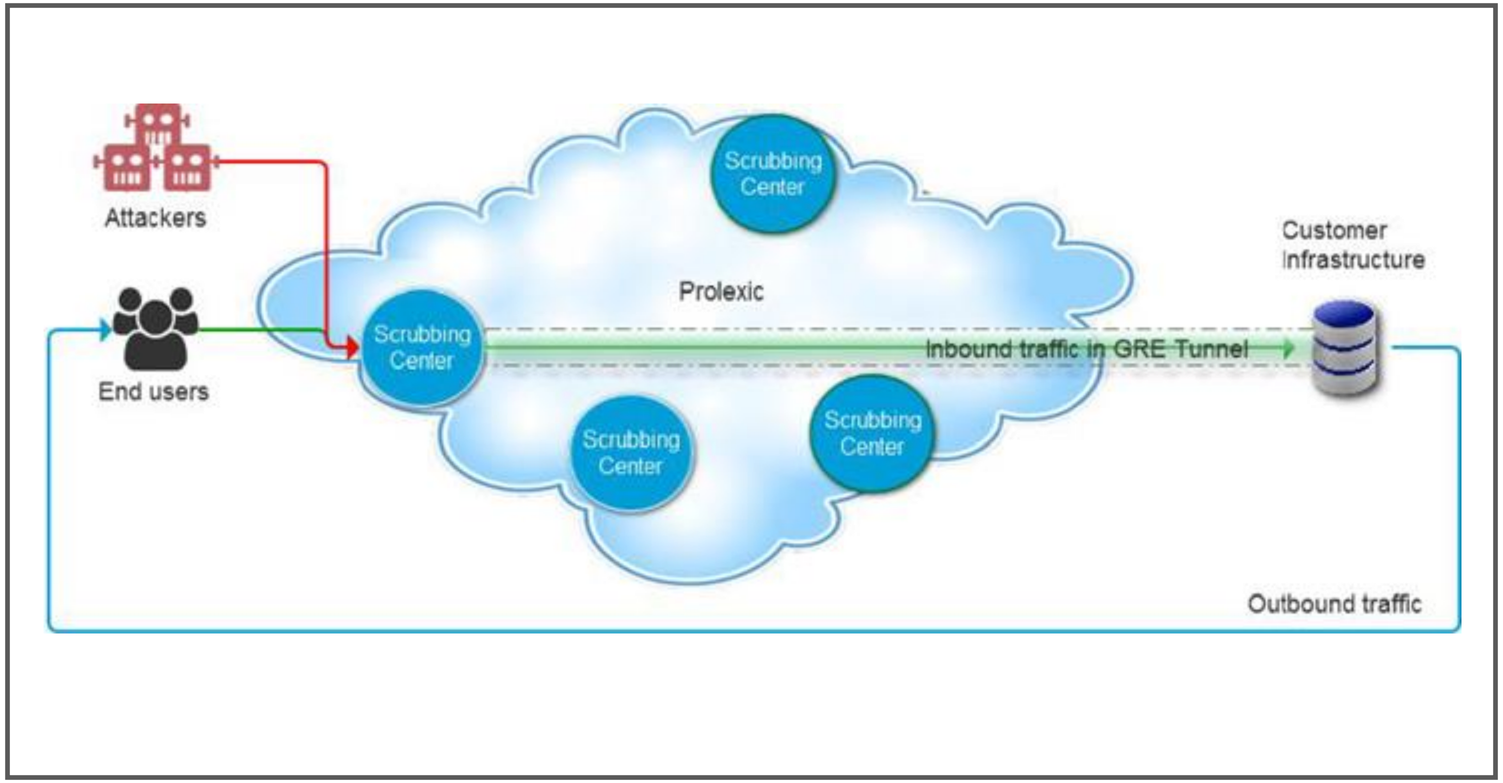
The log files are processed as outlined on page 31.

Details are outlined in the Privacy by Design white paper.

Prolexic

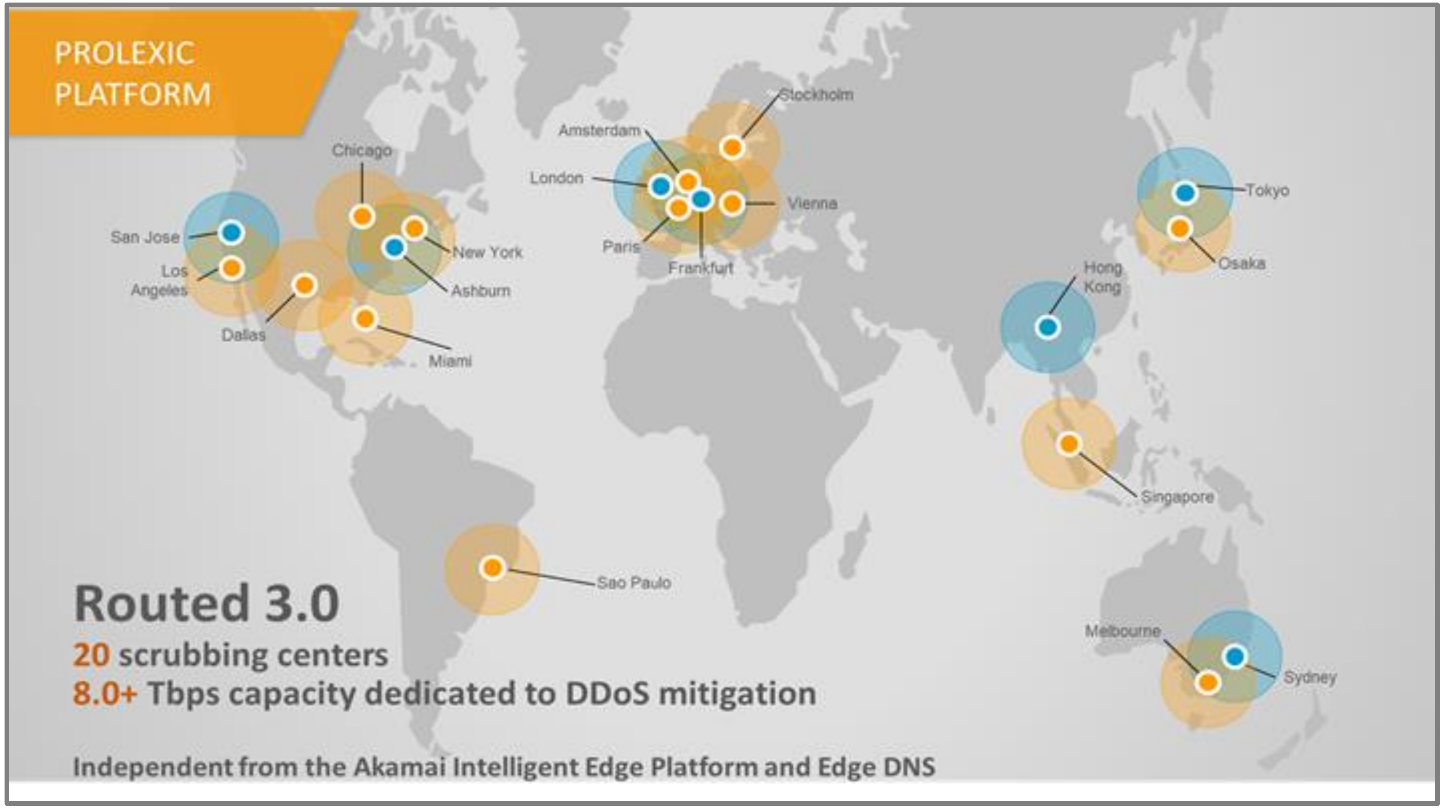
DDoS Protection

Prolexic Services



- Prolexic is a DDoS mitigation solution.
- The personal data element processed is the end-user IP address.
- When the service is enabled, the inbound traffic to the customer is directed to a scrubbing center on the Prolexic platform.
- There the traffic is analyzed for Layer 3, 4, and 7 attacks (http only). Where the traffic is encrypted, it remains encrypted. A TLS termination is not required (as no https traffic analytics are in scope of Prolexic).
- Legitimate traffic is forwarded to the customer’s infrastructure.
- Malicious traffic is blocked and further analyzed in the scrubbing centers.
- The security event logs are transferred to Akamai’s security systems in the USA for further analytics. In most cases the IP addresses relate to devices used by bots, not by humans. In this case the IP is not personal data. Logs are stored in the USA as outlined on page 31.

Prolexic Services



PROLEXIC PLATFORM

Routed 3.0

20 scrubbing centers

8.0+ Tbps capacity dedicated to DDoS mitigation

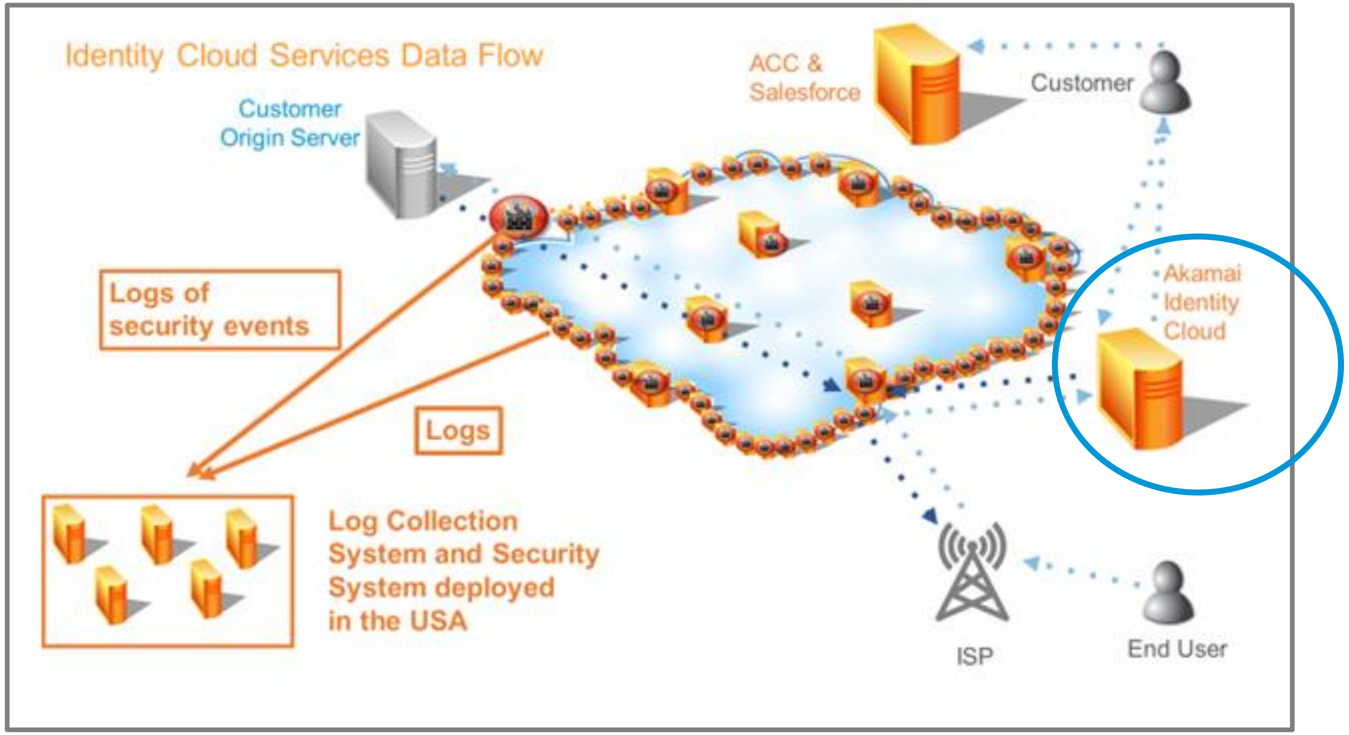
Independent from the Akamai Intelligent Edge Platform and Edge DNS

- Scrubbing Centers are deployed on the Prolexic Platform in the EU, Asia, and the Americas to ensure global coverage and best protection against DDoS attacks.
- While per default for EU traffic scrubbing centers in the EU are chosen, depending on the workload a failover to scrubbing centers in other regions may be used, in particular in case of large attacks, to ensure the availability of the customer website, notwithstanding the attack.
- Akamai does not limit the usage of scrubbing centers to one region to ensure best mitigation of DDoS attacks.
- Log processing for support purposes is described on page 31.

Akamai Identity Cloud

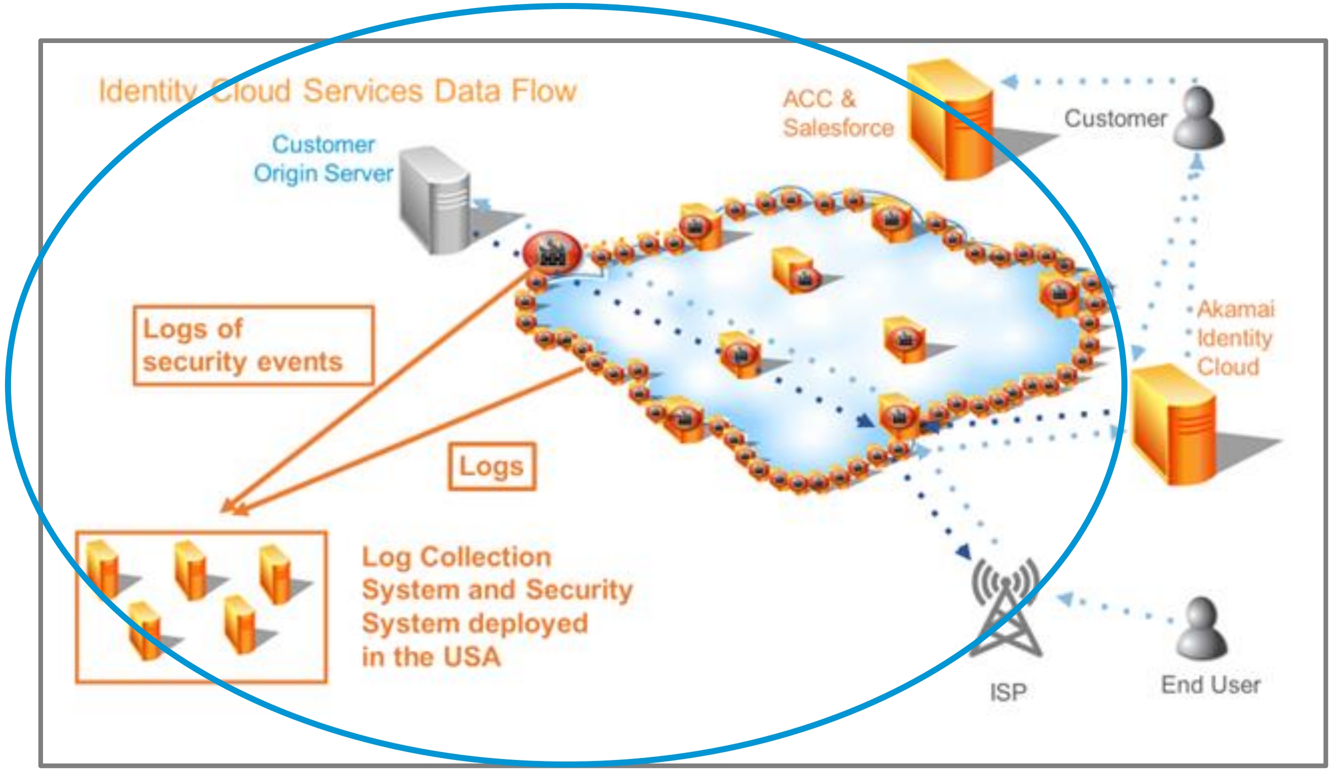
AIC/CIAM

Akamai Identity Cloud Services



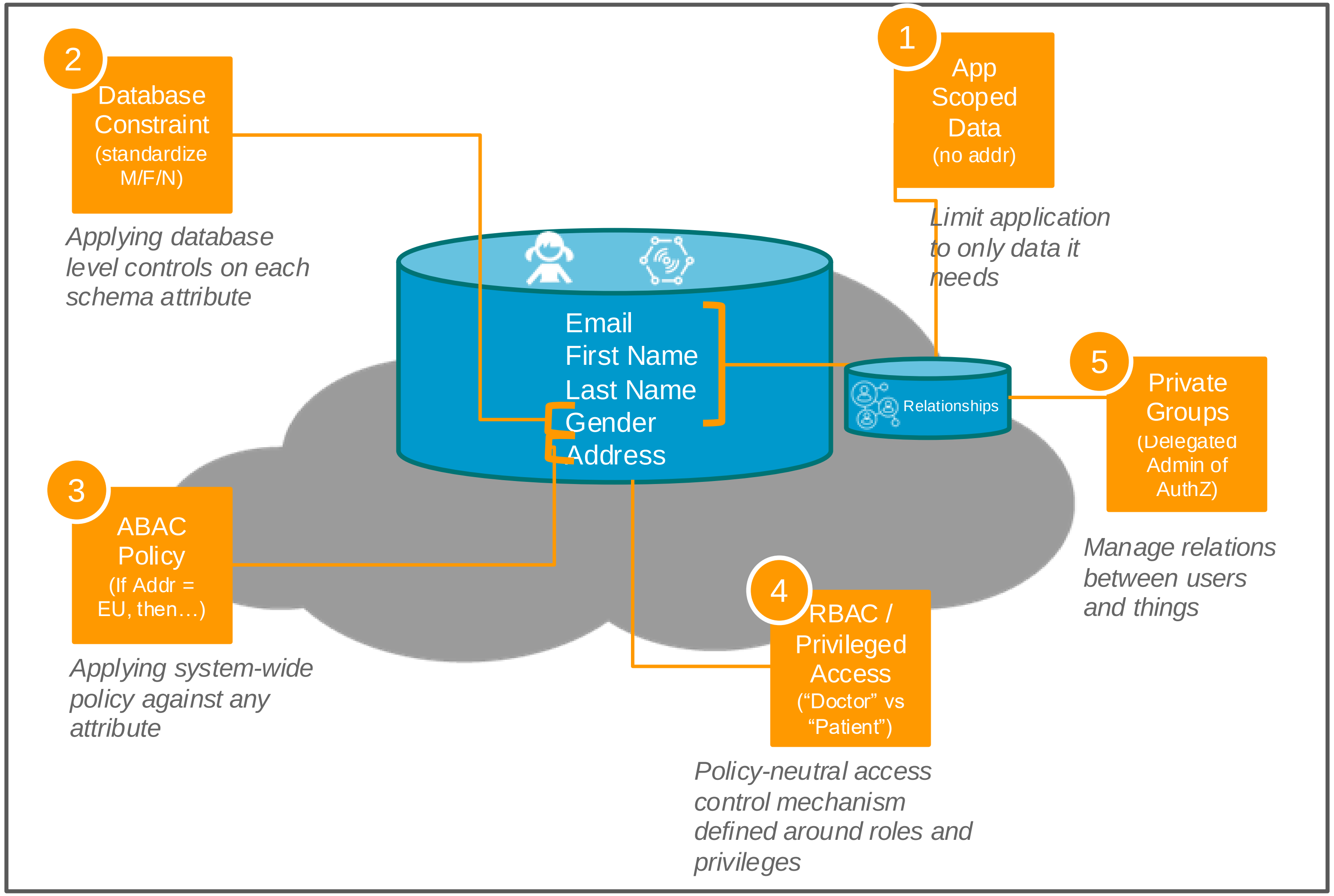
- Identity Cloud is an end-user identity management service on top of Akamai’s web performance services.
- Personal data elements processed relate to the identity of the end user, e.g.,
  - Name
  - Email
  - Address
  - Phone number
  - Age
  - Gender
  - Shopping history
    (e.g., shoe size, preferred toothpaste)
- Personal data elements are collected by the customer, not by Akamai. Akamai hosts and secures the data in Identity Cloud only.
- Identity Cloud runs on AWS as Akamai’s sub-processor.
- The customer determines via the service configuration the storage location of the end-user identities (USA, EU, or APJ).

Akamai Identity Cloud Services



- Akamai's web performance service ensures availability and security of the customer web properties via the Akamai platform (see pages 2–8).
- Log files are processed as outlined on page 31.
- For details about how Identity Cloud helps to comply with data subject rights and other privacy requirements, see this Identity Cloud privacy white paper.

Akamai Identity Cloud Services



2
Database Constraint (standardize M/F/N)
Applying database level controls on each schema attribute
1
App Scoped Data (no addr)
Limit application to only data it needs
Email
First Name
Last Name
Gender
Address
Relationships
5
Private Groups (Delegated Admin of AuthZ)
Manage relations between users and things
3
ABAC Policy (If Addr = EU, then…)
Applying system-wide policy against any attribute
4
RBAC / Privileged Access ("Doctor" vs "Patient")
Policy-neutral access control mechanism defined around roles and privileges

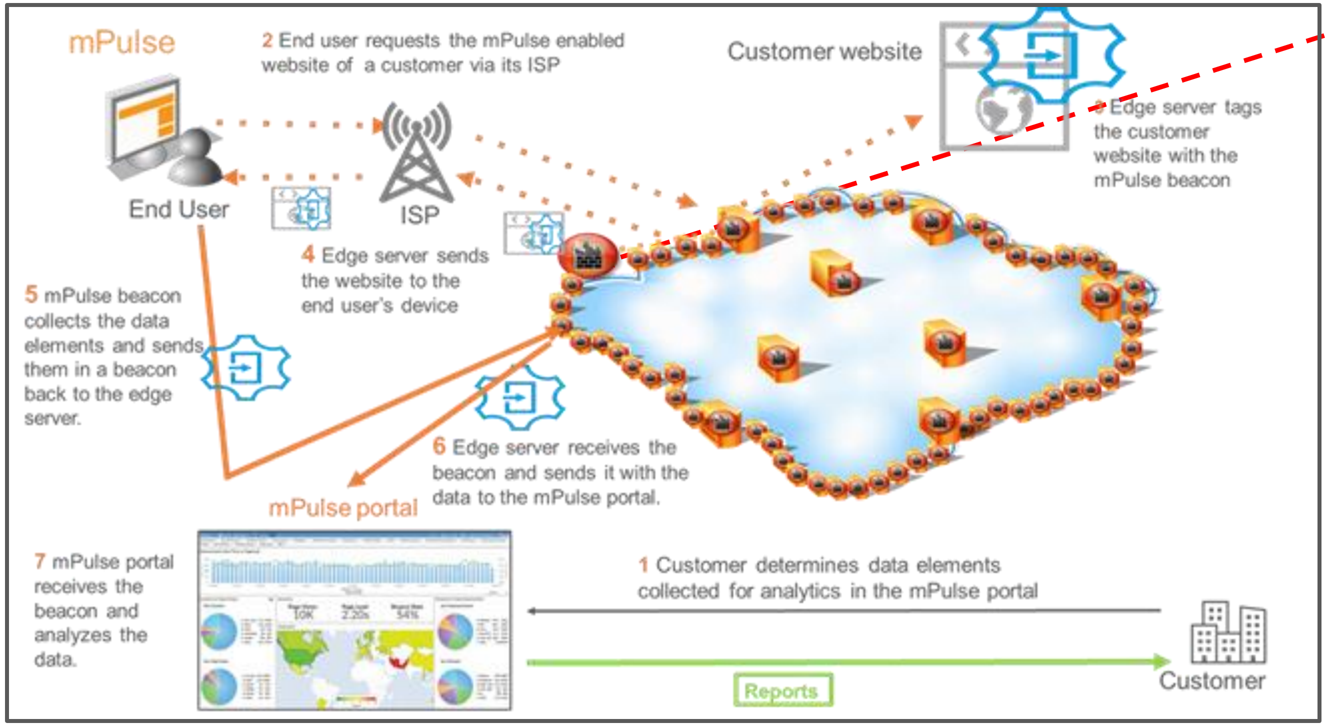
Privacy by Design resulted in the following access controls:

- Limited access to end-user identities for the customer employees based on roles, responsibilities, and application type/use.
- Access only in accordance with need-to-have principle.
- Fine-grained control down to the level of individual data record fields and columns.
- Access is logged and can easily be tracked in case of abuse.

mPulse

Web Performance Services

mPulse Service



2 End user requests the mPulse enabled website of a customer via its ISP

3 Edge server tags the customer website with the mPulse beacon

4 Edge server sends the website to the end user's device

5 mPulse beacon collects the data elements and sends them in a beacon back to the edge server.

6 Edge server receives the beacon and sends it with the data to the mPulse portal.

7 mPulse portal receives the beacon and analyzes the data.

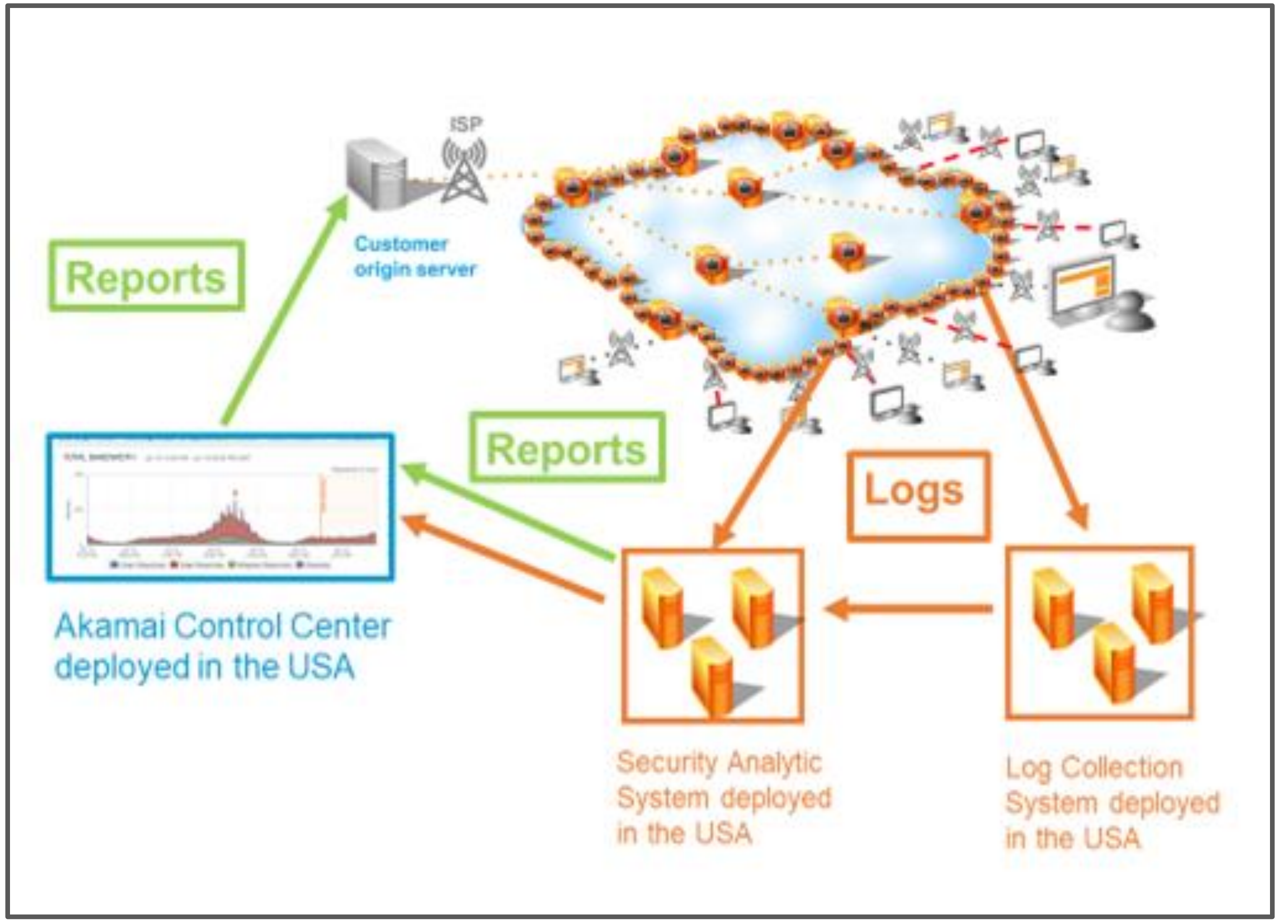
1 Customer determines data elements collected for analytics in the mPulse portal

- mPulse is a website performance analytic service. No end-user analytics are performed.
- The personal data element processed is the end-user IP address. It is anonymized at the edge server.
- Where the edge server is deployed in the EU, personal data is processed only in the EU (the IP is collected as part of the log file creation on the EU-based edge server and anonymized).
- The log files (with the anonymized IP) are transferred from the edge server to the mPulse portal deployed in the USA and analyzed there.
- Analytic reports are created and made available to the customer via the Akamai Control Center.
- Details are outlined in the white paper mPulse Compliance with Global Data Protection Laws.

Log Processing

Performance and Security Analytics and Support Services

Traffic and Security Analytics


ISP
Customer origin server
Reports
Reports
Logs
Akamai Control Center deployed in the USA
Security Analytic System deployed in the USA
Log Collection System deployed in the USA

- Log files consist of metadata collected at the edge server the moment a requests hits an edge server.

- The logs are transferred from the edge servers to Akamai's log collection system deployed in the USA, for traffic analytics.

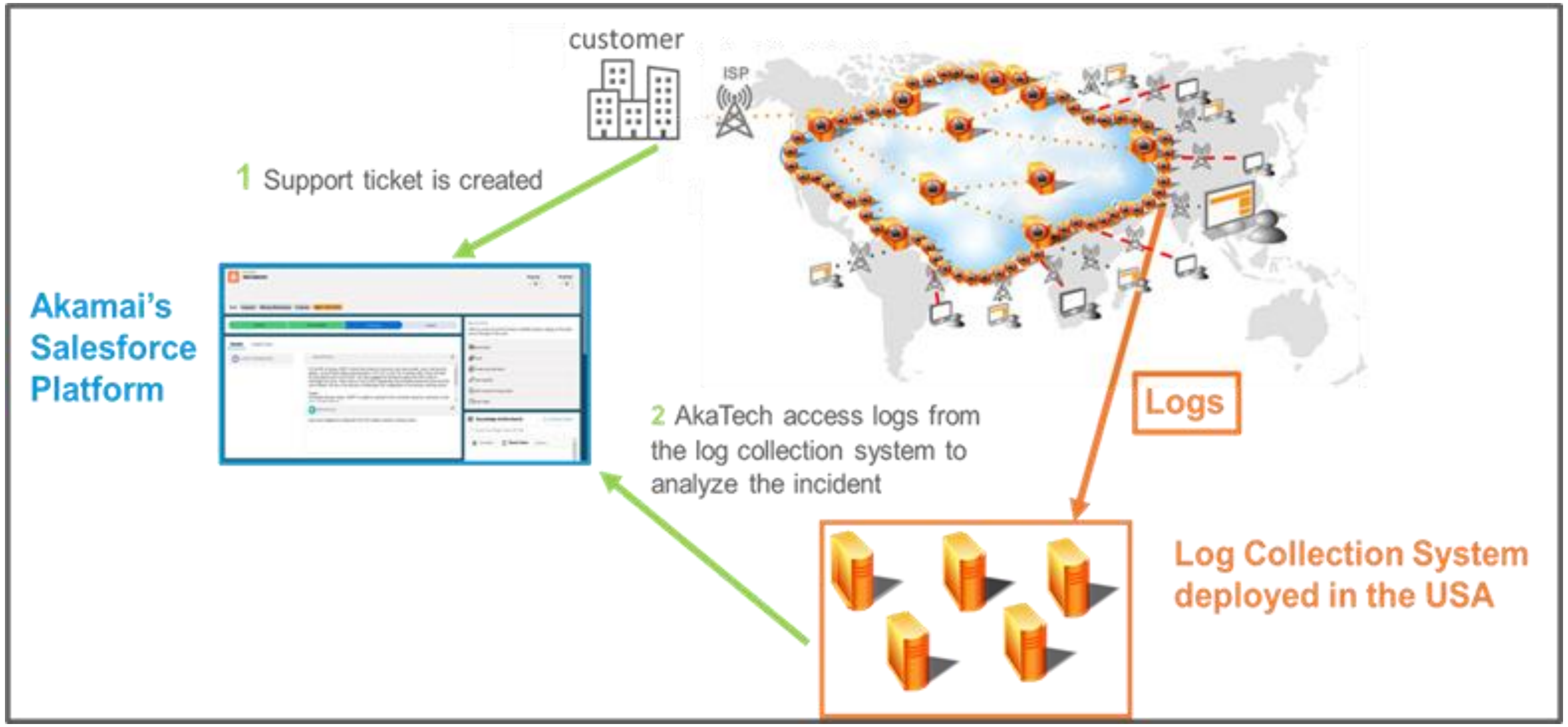
- The logs are forwarded to Akamai's security analytic system, deployed in the USA, for security analytics.

- Reports of the analytics are created and made available to customers in the Akamai Control Center. For some services, Akamai also provides the customers with logs.

- Log retention periods:
  - Couple of hours on the edge server
  - 14 days on the log delivery system
  - 90 days on the security analytic system

  Where required from a security perspective (e.g., to include new attack vectors to the security algorithm), logs are retained for 180 days

Support Services



1 Support ticket is created

Akamai's Salesforce Platform

2 AkaTech access logs from the log collection system to analyze the incident

Log Collection System deployed in the USA

- In case of a service incident, a support ticket is created.
- The ticket is stored in Akamai's Salesforce instance, which is deployed in the USA.
- Akamai's AkaTech team handles the support case by collecting logs related to the request in question from the log collection system or the edge server.
- Logs consist of end-user IP address. So personal data is processed as part of the support service performed.
- Personal data in the support tickets are deleted 120 days after ticket closure.

Data Transfer Risks

In accordance with EDPB's recommendations 01/2020 on data transfers, Akamai has reviewed its security measures to protect data transferred to the USA where most of Akamai's backend systems reside.

These measures are the following:

- Data Transfers are governed by EU SCCs with Akamai group entities and sub-processors as well as the EU Commission's adequacy decision and Akamai's participation in the Data Privacy Framework
- Akamai has law enforcement policies and procedures in place to protect impacted individuals and ensure requests comply with applicable laws.
- Akamai has strict access controls in place protecting its networks and systems against unauthorized access by third parties.
- For CDN services the personal data in a customers' web properties is encrypted using TLS 1.2 when processed via the Akamai Connected Cloud.
- Akamai recommends to configure the CDN service so that personal data in customers' web properties is transiting Akamai's server without being cached.
- Akamai is encrypting server access logs in transit using TLS 1.2.
- Akamai introduced Akamai Data Boundary, its data localization suit covering customer content, traffic logs and security event logs.
- Where data transfer still occur, the data consist of end user IP addresses and other metadata in logs. Akamai does not have the legal means to collect the additional data required to identify individuals using the logs. Thus, the logs are pseudonymized data, if not anonymized data for Akamai.

Given these measures, in Akamai's opinion the data protection risks associated with its data transfers are mitigated by the contractual, technical and organizational measures taken by Akamai.

For more details see Akamai's Data Transfer Statement at: https://www.akamai.com/legal/compliance/privacy-trust-center/cross-border-data-transfer-statement.

Akamai’s Privacy Trust Center:

www.akamai.com/compliance/privacy