

# Traffic Management services on AWS

Feature	Amazon CloudFront	AWS Global Accelerator (AGA)	ALB	NLB
Primary Purpose	Content caching and delivery	Network traffic optimization	HTTP/HTTPS load distribution across multiple targets	TCP/UDP load distribution
Key Benefits	Caching (traffic offloading)   Offloading URL redirects at edge   Performance gains through TLS termination, TLS resumption, persistent connections to origin   Monthly free tier: DTO 1TB, 10M HTTP(S) request	Network traffic acceleration   TCP termination improving network throughput performance of up to 60%   Multi-region blue/green deployments		
OSI Layer	Layer 7 (Application layer)	Layer 4 (Transport layer)	Layer 7 (Application layer)	Layer 4 (Transport layer)
Protocol	HTTP/HTTPS	TCP/UDP	HTTP/HTTPS	TCP/UDP
Traffic Type	HTTP/HTTPS, gRPC, WebSockets	TCP/UDP	HTTP/HTTPS, gRPC, WebSockets	TCP/UDP, TLS, WebSockets (TCP pass-through)
IP Addresses	Dynamic IP Addresses (by default)   <a href="#">Static Anycast IPs</a> (3K p/month): 21 IPv4 across all edge locations; 3IPs for apex/root domains	Static Anycast (auto-provisioned 2 IPv4 + 2 IPv6)	Dynamic IP addresses   Static IPs on ABL not supported	NLB's Static IPs (auto-assigned public IP per AZ)   Elastic IPs (reusable public IP per AZ)
Caching Capability	Yes	No	No	No
Connection Handling	TLS session resumption (offloads handshake processing)	TCP termination (offloads connection management)	TLS termination (offloads encryption/decryption)	TLS termination to offload en/de-cryption at NLB (offloads cryptographic processing)
Connection Termination	TLS termination at edge location	TCP termination at edge while TLS termination at ELB/endpoint	TLS termination at load balancer	TLS termination at load balancer or pass-through to target
SSL/TLS Certificates	Server certificate	No	Server certificate (when using TLS listeners)   Client certificate (when requiring mTLS)	Server certificate (when using TLS listeners) or N/A (pass-through)
Health Checks	Origin level	EC2/Elastic IPs Endpoint level or ALB/NLB inherited	Target level, customizable	Target level, customizable
Origins / Target Endpoints	S3, Lambda   Custom Origins   EC2, ALB, NLB in public subnets   VPC Origin for EC2, ALB, NLB in private subnets	ALB, NLB, EC2 in private subnets   Elastic IP	EC2, IP addresses, Lambda	EC2, IP addresses, Lambda, ALB
Traffic Flows	Edge → Regional Cache → Origin	Edge → Nearest Regional Endpoint	Client → ALB → Targets   Clinet → AGA → ALB → Targets	Client → NLB → Targets
URL Structure	Custom domain names	No URL/domain structure	Hostname with optional path-based routing	No path-based routing (Layer 4)
Service DNS name (A record)	{distribution-id}.cloudfront.net	{id}.awsglobalaccelerator.com	{id}-{region}.elb.amazonaws.com	{id}.elb.{region}.amazonaws.com
Cost	DTO   Requests count   Extra features   Public IPv4 Address (3K p/month)	Fixed fee   DTO   Data Transfer Premium (on the dominant route)   Public IPv4 Address	Hourly fee   LCU usage   Data transfer   Public IPv4 Address	Base + LCU hourly usage   Data transfer   Public IPv4 Address
Security	AWS Shield   AWS WAF   Field-level encryption	<a href="#">AWS Shield Standard</a> / Advanced	<a href="#">Security policies</a> (TLS + ciphers)   AWS Shield   AWS WAF	AWS Shield integration
Cross-Region	Built-in global distribution	Built-in global distribution	Regional   Manual configuration required	Regional   Manual configuration required
Custom HTTP Headers	Y through request/response policies	No	Y through HTTP header modification	No header manipulation
Persistent connections	Yes, HTTP keep-alive			
Preserve client IP	Via header CloudFront-Viewer-Address	Supported for target: ALB, EC2, NLB with security groups. Not supported for Elastic IP, NLB without security groups.		

# Domain routing

DNS Provider	Route53			External DNS Provider	
DNS Record Type	A Record	A Record	CNAME	CNAME	A record(s)
Domain name	root/sub	root/sub	sub	sub	sub
Mechanism → Target ↓	Route53 Alias (same/cross-account)	IP Address	DNS	DNS	IP Address
Any IP Address	-	Y			Y
Any DNS domain	-		Y	Y	
CloudFront	{distribution-id}.cloudfront.net			{distribution-id}.cloudfront.net	3IPs
Global Accelerator	{id}.awsglobalaccelerator.com			{id}.awsglobalaccelerator.com	2IPs
ALB	{id}.{region}.elb.amazonaws.com			{id}.{region}.elb.amazonaws.com	
NLB	{id}.elb.{region}.amazonaws.com			{id}.elb.{region}.amazonaws.com	IPs per AZ
API Gateway	{id}.execute-api.{region}.amazonaws.com			{id}.execute-api.{region}.amazonaws.com	
S3 website endpoint	{dns}.s3-website-{region}.amazonaws.com			{dns}.s3-website-{region}.amazonaws.com	
Route53: Cost	Free	\$ / DNS queries		\$ / DNS queries	\$ / DNS queries