

## Day - 1

- **Introduction to Cloudflare Edge Network**

- Global footprint, architecture, and how edge computing works.
- Positioning Cloudflare vs traditional CDNs and firewalls.

- **DNS - Authoritative DNS with Security & Speed**

- How Cloudflare DNS works (1.1.1.1 resolver, authoritative DNS).
- DNSSEC, rate-limiting, and query performance.
- Lab: Migrate a domain to Cloudflare DNS and enable DNSSEC.

- **CDN (Content Delivery Network)**

- CDN principles (caching, latency reduction, offloading origin).
- Cache behavior: cache-control headers, cache everything vs bypass.
- Lab: Configure caching rules and validate content delivery through edge nodes.

- **Argo Smart Routing**

- Intelligent path routing using Cloudflare's backbone.
- Latency optimization in dynamic workloads.
- Lab: Enable Argo and measure latency improvement.

- **Load Balancing**

- Global load balancing vs traditional DNS load balancing.
- Health checks and geo-routing.
- Lab: Deploy load balancing with failover between two origins.

- **Spectrum, Magic Transit, Magic WAN & Magic Firewall**

- Spectrum: Protecting gaming, VoIP, SMTP, SSH apps.
- Magic Transit: Protecting IP ranges from volumetric attacks.
- Magic WAN: WAN-as-a-Service to connect distributed sites.
- Magic Firewall: Layer 3/4 firewall at the edge.
- Lab: Configure Spectrum to protect a TCP-based application.

- **Wrap-Up & Outcomes**

- Understand how Cloudflare accelerates & secures at the network level.
- Configure DNS, CDN caching, Argo, and load balancing.
- Gain first exposure to enterprise features like Spectrum and Magic Transit.

- **DDoS Protection**

- Types of attacks: L3/L4 vs L7.
- Cloudflare's always-on architecture for volumetric attacks.
- Lab: Simulate HTTP flood & validate Cloudflare mitigation.

- **WAF (Web Application Firewall)**

- OWASP Top 10 threats & Cloudflare managed rules.
- Creating custom firewall rules with expressions.
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- **Bot Management & Rate Limiting**

- ML-based bot detection.
- Differentiating between good bots (Googlebot) & malicious scrapers.
- Lab: Set bot protection rules + rate limiting on API endpoints.

- **API Shield**

- API schema validation and mTLS for APIs.
- JSON schema enforcement.
- Lab: Configure API Shield with mTLS client cert.

- **SSL/TLS & Page Shield**

- Cloudflare's Universal SSL, HSTS, and TLS 1.3.
- Page Shield for detecting Magecart & supply chain JS injection.
- Lab: Enable strict SSL mode, automatic HTTPS rewrite.

- **Email Security (Area 1)**

- Phishing & BEC protection.
- Integration with Microsoft 365 & Google Workspace.

- **Wrap-Up & Outcomes**

- Participants learn to secure apps at L3, L4, and L7.
- Deploy WAF & DDoS protection policies.
- Protect APIs, bots, and email against modern threats.

- **Zero Trust Overview**

- Why Zero Trust vs traditional perimeter security.
- Cloudflare One architecture.

- **Secure Web Gateway (SWG)**

- Controlling web traffic with policy enforcement.
- Malware filtering, DNS/content filtering.
- Lab: Configure SWG to block malicious categories.

- **CASB (Cloud Access Security Broker)**

- Visibility into SaaS usage.
- Detecting shadow IT and unauthorized apps.
- Lab: Configure CASB for SaaS visibility.

- **Data Loss Prevention (DLP)**

- Identifying sensitive data (credit cards, PII).
- Preventing exfiltration over HTTP/SaaS.
- Lab: Enable DLP and test detection of sensitive payloads.

- **Zero Trust Network Access (ZTNA)**

- VPN replacement using identity-aware access.
- App-specific authentication with IdPs (Okta, Azure AD, Keycloak).
- Lab: Secure an internal app with ZTNA and MFA.

- **Wrap-Up & Outcomes**

- Deploy a Zero Trust security stack with SWG, CASB, DLP, and ZTNA.
- Understand VPN replacement strategies.

- **Performance Optimization**

- Caching rules & tiered caching.
- Polish & Mirage for images.
- Rocket Loader for JS optimization.
- APO for WordPress/other CMS.
- Lab: Apply caching & APO rules, measure improvements.

- **Video Streaming (Stream)**

- Secure global video delivery.
- Adaptive bitrate streaming.
- Lab: Upload and deliver video using Cloudflare Stream.

- **Edge Developer Platform**

- Workers: Serverless compute at the edge.
- Pages: JAMstack CI/CD hosting.
- R2 Storage: S3-compatible, no egress fees.
- D1 Database: SQL at the edge.
- Queues: Distributed event-driven apps.
- Workers AI: Inference at the edge.
- Lab: Build a small serverless API with Workers, Pages, and R2 storage.

- **Wrap-Up & Outcomes**

- Optimize apps for speed & reliability.
- Gain developer experience with Workers, R2, D1, and Pages.
- Deliver video + web apps entirely from Cloudflare's edge.

- **Analytics & Monitoring**

- Real-time dashboards (security, performance, traffic).
- Logpush integration with Splunk, Datadog, ELK.
- Bot Analytics & Network Analytics.
- Lab: Export logs to SIEM and build a monitoring dashboard.

- **Enterprise & Compliance**

- Custom SLAs & enterprise-grade support.
- Regional services & data residency controls.
- Compliance with SOC2, ISO, GDPR, CCPA, HIPAA.
- Case Study: Cloudflare deployment in regulated industries (finance, healthcare).

- **Capstone Project**

- Participants design a complete Cloudflare solution:
- DNS + CDN + Load Balancing.
- DDoS + WAF + Bot rules.
- Zero Trust policies for workforce apps.
- Performance optimization (caching, APO, image optimization).
- Workers-based serverless app.
- Logpush integration with SIEM.
- Presentation of design & lessons learned.

- **Wrap-Up & Outcomes**

- End-to-end hands-on mastery of Cloudflare features.
- Confidence to design & manage production-ready Cloudflare deployments.
- Next steps: Certifications, Cloudflare communities, enterprise adoption.