G-Cloud 15

Service Definition

CrowdHandler Ltd

Virtual Waiting Room

Lot 2a: Infrastructure Software as a Service (iSaaS)

Contents

1. SERVICE OVERVIEW

CrowdHandler is an enterprise-grade virtual waiting room solution delivered as Software as a Service (SaaS). The service protects websites and digital services from traffic overload during periods of high demand by managing user access through a fair, transparent queuing system.

When traffic exceeds your infrastructure's capacity, CrowdHandler automatically redirects excess visitors to a branded waiting room page, queues them on a first-in-first-out basis, and releases them back to your service at a controlled, sustainable rate. This ensures infrastructure stability, prevents crashes, and maintains a positive user experience during critical high-traffic events.

Unlike traditional infrastructure scaling approaches that require significant investment and still face transactional limitations, CrowdHandler provides a cost-effective solution that works with your existing infrastructure. The service operates without requiring access to end-user personally identifiable information, making it particularly suitable for public sector applications where data protection is paramount.

CrowdHandler is trusted by government agencies, public health organisations, transport authorities, online retailers and educational institutions globally to ensure fair, equitable access to critical digital services during peak demand periods.

2. KEY FEATURES AND BENEFITS

Fair and Transparent Access Management

CrowdHandler ensures that all users receive fair treatment during high-demand periods through transparent, first-in-first-out queue management. The system guarantees equitable access regardless of connection speed or technical sophistication, preventing advantaged users from monopolising limited resources.

Users waiting in the queue receive real-time position updates showing their place in line, estimated wait time, a progress bar, and, where applicable, remaining availability. This transparency transforms what could be a frustrating experience into an organised, understandable process.

For scheduled events, countdown timers allow you to safely gather early visitors, and randomize them, providing equitable access when the service becomes available, and discouraging early traffic spikes. This prevents those with the fastest internet connections from gaining unfair advantages and demonstrates institutional commitment to equity.

Benefit for Government: This transparent approach demonstrates commitment to equitable access for all citizens, significantly reduces complaints and negative social media sentiment, and ensures compliance with accessibility and fairness requirements.

AutoTune: Intelligent Automated Traffic Control

One of the most significant challenges during high-load online events is managing the rate at which users are admitted to services. Traditional approaches rely on technical teams making high-pressure decisions in real-time, constantly adjusting admission rates based on system

performance. This places enormous stress on staff and introduces significant risk of either admitting too many users (causing crashes) or too few (creating unnecessarily long queues).

AutoTune removes this burden entirely through intelligent automation. The system continuously monitors page load times, server response times, error rates, and application-level performance. When systems are healthy, it automatically increases admission rates to minimise wait times. When strain appears, it instantly reduces admission rates to protect against crashes -- all without manual intervention.

The system adapts to actual traffic behaviour rather than theoretical load test scenarios, making it particularly effective during real-world events where user patterns often differ from predictions. AutoTune works seamlessly with auto-scaling infrastructure, managing traffic during the critical warm-up period when new servers are spinning up -- typically the most vulnerable period of any traffic spike.

A major ticketing platform recently demonstrated AutoTune's effectiveness across two consecutive days of identical high-profile concert sales. On day one, using manual traffic control, queues extended to 24 hours with server issues and customer frustration. On day two, with AutoTune activated, the identical demand sold out in just 4 hours with no significant server issues and dramatically improved customer satisfaction.

Benefit for Government: AutoTune reduces dependency on specialist technical staff during critical events, improves service delivery, and allows teams to focus on strategic monitoring rather than tactical firefighting. This represents a significant operational risk reduction for high-stakes public services.

Cost-Effective Infrastructure Protection

Many organisations facing occasional traffic spikes consider massive infrastructure investments to handle peak loads. However, this approach proves both expensive and often ineffective. Most applications face transactional bottlenecks that cannot be scaled away--database transaction limits, payment system constraints, and third-party API rate limits remain regardless of how many servers are added.

CrowdHandler provides protection that works with existing infrastructure rather than replacing it. The service offloads queued users entirely from origin servers, reducing compute costs and infrastructure load. It adds only 20 to 200 milliseconds of latency whilst preventing hours of potential downtime. The system works alongside caching, CDNs, and auto-scaling infrastructure, complementing rather than conflicting with existing optimisations.

Beyond protection, the service helps identify real bottlenecks through actual traffic behaviour. Organisations can observe their systems under controlled load, discovering whether issues lie in database queries, API calls, or other components—information that theoretical load tests often fail to reveal.

Benefit for Government: This approach achieves better outcomes at significantly lower cost compared to infrastructure over-provisioning. Public sector organisations can protect critical services without major capital expenditure, whilst maintaining availability during the crucial moments that define user experience and public perception.

Customisable User Experience

Waiting rooms can be fully customised to match organisational branding and communication needs. Custom, mobile-responsive templates provide complete control over layout, content, colours, and messaging. This ensures that users waiting in the queue remain confident

they're on an official, legitimate service rather than being redirected to an unfamiliar third-party site.

Dynamic messaging capabilities allow organisations to communicate with users during wait periods. Waiting rooms can display important notices—transforming idle time into an opportunity for useful communication. For longer waits, email notifications allow users to manage other tasks whilst maintaining their queue position.

Benefit for Government: Customisation maintains professional appearance and citizen confidence, provides opportunities for proactive communication, and ensures waiting is seen as organised management rather than technical failure. This transforms a potential negative experience into a demonstration of competent service delivery.

Easy Integration and Deployment

CrowdHandler offers multiple integration methods to suit different technical environments and requirements. DNS implementation requires only a DNS change with zero code modifications, enabling deployment within hours. JavaScript integration provides quick deployment with effective load protection for most web applications. Server-side SDKs offer greater control for applications with specific requirements. Native AWS CloudFront integration via CloudFormation templates serves AWS-hosted applications, whilst RESTful API access enables custom implementations.

Crowdhandler can also integrate via an Edgeworker on popular CDNs Cloudflare and Akamai.

Comprehensive documentation and technical support guide implementations throughout the process.

Benefit for Government: Rapid deployment minimises project risk and time-to-value. Multiple integration options ensure compatibility with existing technology estates and procurement requirements, whilst allowing organisations to choose the approach that best balances security, convenience, and technical resources.

3. PUBLIC SECTOR USE CASES

CrowdHandler has proven value across multiple public sector scenarios where fair access, service reliability, and cost management are critical concerns. The following examples demonstrate real-world applications and benefits.

Public Health Services

During the COVID-19 pandemic, regional governments in Canada and major pharmacy chains across North America deployed CrowdHandler to manage unprecedented demand for vaccination appointments. The service ensured equitable access for all citizens regardless of technical capability, protecting booking systems during periods of extreme demand to enable fair distribution of limited appointment slots.

The transparent queue system maintained public confidence in critical health infrastructure whilst reducing call centre burden. Citizens could see their position in line and estimated wait time, eliminating the frustration of repeatedly refreshing pages or uncertainty about whether they would secure appointments. This transparency proved essential during a period when public trust in institutions faced unprecedented strain.

Government Services and Registrations

The Danish Valuation Agency deployed CrowdHandler to manage public consultations on property valuations (an annual pinch point when the opportunity to request revaluation goes live), ensuring all citizens had equal opportunity to participate in consultation periods regardless of when they accessed the system. This demonstrated commitment to democratic participation whilst protecting infrastructure from overload.

Denmark's largest energy cooperative utilised the service for dividend registration during an extraordinary dividend distribution. By preventing system failures that would delay payments to members, the organisation avoided significant administrative burden and maintained member confidence in digital service delivery.

A Netherlands regional government managed high-volume compensation claims processing with CrowdHandler, ensuring fair access whilst protecting backend systems from overload. The transparent queue system reduced complaints and support requests, freeing staff to focus on claims processing rather than system troubleshooting.

Public Transport and Critical Infrastructure

Comutitres, the agency responsible for transport ticketing in Ile-de-France (Paris metro region) use CrowdHandler to offload excessive traffic during peak annual periods: CrowdHandler queues excess traffic during the Renewal of Navigo subscriptions (equivalent to London’s Oyster card) and during compensation claims for service delivery issues.

Educational Institutions

Universities face intense pressure during course registration periods when thousands of students compete for limited places. Registration system crashes damage institutional reputation, create administrative chaos, and generate significant student dissatisfaction. CrowdHandler addresses these challenges by preventing system crashes, ensuring fair access to high-demand courses, reducing IT support burden during critical registration periods, and managing demand for summer programmes, conference registrations, and event ticketing.

The service supports priority access systems for specific student groups when appropriate—such as honours programmes, athletes, or disabled students—whilst maintaining overall fairness. Countdown timers for scheduled registration windows manage student expectations and prevent everyone from attempting to access systems simultaneously at the moment registration opens.

Beyond course registration, universities utilise CrowdHandler for housing applications, parking permit sales, recreational facility memberships, and graduation ticket distribution. Each of these scenarios involves limited resources, high demand, and institutional commitment to fair allocation.

Common Benefits Across Public Sector Deployments

Across these diverse applications, several common benefits emerge. Organisations demonstrate commitment to equitable service delivery for all citizens, maintain public confidence during critical service delivery periods, and reduce administrative burden and support costs. Infrastructure investments are protected from peak-load failures, transparent and auditable queuing processes satisfy accountability requirements, and integration with existing systems occurs without extensive redevelopment. GDPR compliance through data minimisation satisfies regulatory requirements whilst respecting citizen privacy.

4. CORE FUNCTIONALITY

Queue Management

The service implements first-in-first-out queue processing to ensure fair treatment of all users. Admission rates are fully configurable, measured in users per minute and tailored to infrastructure capacity. Organisations can run multiple simultaneous queues across different services or domains, each with independent configuration.

Scheduled waiting rooms with countdown timers support planned events, whilst always-on "safety net" mode engages only when traffic exceeds configured thresholds. This dual approach allows organisations to prepare for anticipated demand whilst maintaining protection against unexpected spikes. Randomisation options for scheduled events ensure equal opportunity for all participants arriving on time.

Queue capacity limits can be configured with "room full" messaging and waiting functionality, allowing organisations to manage scenarios where demand dramatically exceeds available capacity. This prevents overwhelming backend systems whilst maintaining user communication.

Real-Time Monitoring and Control

The live dashboard displays queue status, throughput rates, and active user counts in real-time. Admission rates can be adjusted immediately via web interface or API, allowing responsive management during events. Historical reporting on traffic patterns, queue lengths, and system performance enables continuous improvement and capacity planning.

Performance metrics tracking supports ongoing optimisation, whilst Google Analytics integration provides comprehensive visitor tracking. Log retention periods range from 1 to 30 days depending on service plan, balancing operational needs with data minimisation principles.

Security and Bot Protection

Automated bot detection and threat blocking leverage IP reputation databases to identify and block known malicious sources. Anomaly detection analyses IP reputation, geolocation, user agent patterns, session behaviour, and velocity to identify suspicious activity. A global block list derived from cross-customer threat intelligence provides protection against emerging threats identified across the entire CrowdHandler customer base.

Device fingerprinting prevents session sharing and queue position trading, ensuring that users cannot circumvent fair queuing by distributing positions across multiple devices. CAPTCHA integration provides human verification when required, preventing bots from creating queue positions. IP-based firewall rules enable blocking, ignoring, bypassing, or prioritising specific addresses, whilst IP session limiting prevents individual addresses from monopolising queue positions.

Priority Access Management

The service supports single-use or multi-use priority access codes for pre-approved or essential service users. Multiple priority groups with different access levels can be configured, enabling nuanced access control. IP-based prioritisation recognises known organisational addresses, whilst configurable priority lane behaviour ensures fair distribution

across user groups. This functionality proves particularly valuable for public sector scenarios where certain groups require preferential access based on policy requirements rather than commercial considerations.

5. INTEGRATION OPTIONS

CrowdHandler provides flexible integration methods to accommodate various technical environments, timelines, and security requirements. Organisations can choose the approach that best balances their specific needs.

JavaScript Integration

JavaScript integration requires adding a single script tag to website pages. Implementation typically completes in under two hours and suits most web applications and content management systems. This approach provides acceptable load protection for many use cases, though it can be bypassed by technically sophisticated users. Organisations with high-security requirements should consider alternative integration methods.

DNS Implementation

Our DNS implementation provides a turnkey solution requiring only a DNS change with no application code modifications. All traffic routes through CrowdHandler's CDN (based on AWS CloudFront) before reaching the origin, ensuring the solution cannot be bypassed by sophisticated users. A no-bypass token using a shared secret provides additional security. This method suits organisations requiring rapid deployment with high security and minimal technical overhead.

AWS CloudFront

AWS-hosted applications can utilise native CloudFront integration via CloudFormation templates, managing traffic at the edge before reaching infrastructure.

CDN EdgeWorkers

CrowdHandler provides ready-to-deploy edgeworker code for Cloudflare and Akamai CDNs, allowing the gatekeeping of applications and serving of waiting rooms with no load at all on your backend, whilst retaining full control of your environment.

Server-Side SDK Integration

Server-side SDKs provide greater control for applications requiring programmatic queue management. Available for common server environments, this approach cannot be bypassed through client-side manipulation. Implementation requires application code modifications but offers security suitable for high-stakes scenarios.

RESTful API

For custom implementations or integration with bespoke systems, the RESTful API provides full programmatic control of all CrowdHandler features through a JSON-based architecture. Comprehensive API documentation and technical support guide custom implementations.

6. DATA PROTECTION AND SECURITY

Data Minimisation Approach

CrowdHandler collects only data strictly necessary for anonymous session tracking: anonymous tokens, IP addresses, user agent strings, language preferences, URLs requested, and performance metrics. The service operates without requiring names, email addresses, account information, or any traditional personally identifiable information. IP addresses can be obfuscated upon request for organisations with strict data protection interpretations.

Regulatory Compliance and Security

The service maintains full GDPR compliance with privacy by design principles and PCI DSS compliance for payment processing. TLS 1.2+ encryption protects all communications, whilst encryption at rest using AWS RDS native encryption safeguards stored data. Automatic security patching, AWS IAM access controls with mandatory two-factor authentication, and continuous threat detection through Amazon CloudWatch and GuardDuty provide comprehensive security coverage. Comprehensive incident response procedures include commitment to customer notification within 5 days of any data incidents.

Data retention balances operational needs with privacy principles: session logs are retained for 30 days in database snapshots, access logs for 12 months, with hourly database snapshots geographically replicated. Data deletion occurs within 90 days of account closure.

7. TECHNICAL ARCHITECTURE

The service utilises serverless architecture on AWS infrastructure with primary hosting in US East 2 (Ohio) and failover replica in US East 1 (North Virginia). Multi-availability zone deployment ensures resilience, whilst AWS-managed data centres provide ISO 27001 and SOC 1/2/3 compliance. The application stack leverages AWS Route53, CloudFront, Lambda, API Gateway, RDS, S3, CloudWatch, and GuardDuty to deliver edge-based traffic management.

The architecture adds approximately 20 milliseconds of latency whilst completely offloading queued users from origin infrastructure. The system handles significant traffic spikes without degradation, automatically scaling as demand requires.

8. SERVICE LEVELS AND SUPPORT

Support is delivered via email with guaranteed response times: Professional plans receive a 2-hour response SLA, Enterprise plans receive 1-hour response SLA, and custom plans can offer tailored arrangements. Support channels include the web portal at support.crowdhandler.com, email at support@crowdhandler.com, and a 24/7 accessible knowledge base. Security incidents are handled via security@crowdhandler.com.

Service availability is maintained through multi-region failover infrastructure with "Trust on Fail" default configuration ensuring core services remain available even during CrowdHandler outages. Annual disaster recovery testing validates procedures, whilst continuous monitoring with automated alerting enables proactive issue management.

9. ONBOARDING AND OFFBOARDING

Account setup occurs on the same day as contract signature. Basic configuration typically requires 1-2 hours, with DNS and CDN EdgeWorker implementations typically deploying in 24 hours or less. API integration varies by complexity, and use case. Throughout implementation, organisations can receive dedicated technical implementation support, in addition to comprehensive documentation and best practice guidance. Test domains enable pre-production validation.

Offboarding proceeds through written notice as per contract terms. Data export remains available during the active subscription period, with integration removal support provided. Complete data deletion occurs within 90 days.

10. BUSINESS CONTINUITY

Hourly automated database snapshots with 30-day retention provide comprehensive backup coverage. Geographic replication to a separate AWS region ensures data availability even during regional disruptions. Monthly restoration testing validates recovery procedures, whilst version-controlled application code and infrastructure templates enable rapid reconstruction.

Disaster recovery capabilities include a complete production replica in AWS US East 1, continuous database replication with near-zero recovery point objective, and DNS-based failover for rapid traffic redirection. Recovery time objective ranges from minutes to hours depending on the scenario. Annual disaster recovery testing ensures procedures remain effective and staff remain prepared.

11. SERVICE CONSTRAINTS

Service plans define concurrent queue capacity limits, throughput rates (users per minute), monthly data transfer limits for DNS implementation, and number of supported domains. Custom plans accommodate requirements exceeding standard tiers.

DNS implementation is not suitable for payment card data processing due to PCI DSS scope requirements. Primary data storage occurs in the United States, PII (user accounts) is stored in AWS EU-1 (Dublin) with GDPR-compliant processing. TLS 1.2 or higher is required for all connections. IP obfuscation, when enabled, may reduce some security feature effectiveness.

Routine maintenance occurs during off-peak hours, typically 02:00-06:00 GMT, with advance notification provided. Zero-downtime deployments handle the vast majority of updates.

12. ORDERING PROCESS

Procurement begins by contacting the sales team at sales@crowdhandler.com to discuss requirements. The team provides tailored quotations based on anticipated demand, negotiates contract terms and service level agreements, and executes contracts under standard G-Cloud framework terms. Account provisioning follows contract signature.

Public sector arrangements utilise annual contracts with invoice-based billing. Purchase orders are accepted, with flexible invoicing accommodating procurement requirements. Payment terms are specified in contracts, typically 30 days.

UK Invoices are raised in GBP.

Service plans include Professional tier suitable for many public sector requirements, Enterprise tier for high-capacity or mission-critical deployments, and Custom plans tailored by the sales team for specific requirements not met by standard offerings.

APPENDIX: CONTACT INFORMATION

General Enquiries

Email: hello@crowdhandler.com
Website: www.crowdhandler.com

Technical Support

Email: support@crowdhandler.com
Portal: https://support.crowdhandler.com

Security Incidents

Email: security@crowdhandler.com

Company Information

Company Name: CrowdHandler Ltd.
Company Registration: England Co. 12677268
Documentation: https://www.crowdhandler.com/support

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This service definition document is current as of the date of G-Cloud application submission. For the most up-to-date information, please refer to www.crowdhandler.com or contact hello@crowdhandler.com.