

BrytelQ Venue WiFi

Product Requirements Document (PRD)

Vision

Venues must no longer compete with the couch. Instead, they must compete with immersion on the scale of Disneyland and the Las Vegas Sphere because fans no longer just want to attend a sporting event or show. They want to step into an immersive world the moment they walk through the gates!

Imagine a network that recognizes you beyond being a body in a seat and sees you as part of the moment. It unlocks experiences that feel personal like you are the only one there while at the same time pulling you deep into the energy of the crowd. General admission unlocks real-time stats, highlights or set lists. Premium tiers deliver AR replays, instant ordering and exclusive backstage content. VIPs gain priority bandwidth for streaming, betting integrations and immersive second-screen layers synced with the game or show.

This is experience orchestration that is context-aware and tier-based, made possible by Charter's BrytelQ APIs. By exposing network intelligence through APIs such as Location Verification, SSID Management and QoS, Charter transforms connectivity from a commodity into a platform where every venue (mega stadium, high school stadium, concert, rodeo...) can become a theme park for fandom.

Problem

Venue WiFi today is undifferentiated, which leaves fans disengaged and venues unable to monetize digital experiences. Venues and event coordinators want to enable these kinds of immersive and differentiated fan experiences but they need an easy way to do it with their existing technology vendors.

Charter has the assets and deep experience to change this.

By exposing network intelligence through BrytelQ APIs, Charter can turn bandwidth into a differentiated, tiered service that unlocks new revenue streams for venues and unforgettable experiences for fans.

Without context-aware connectivity, stadiums and concerts remain stuck as a utility instead of a platform. With BrytelQ, Charter becomes the platform that transforms every venue into an immersive digital theme park experience.

Personas

Persona	Job to Be Done (JTBD)	Desired Outcome
Venue CTO/ IT Director	Make sure the existing WiFi stack can deliver new fan experiences without ripping and replacing.	Seamless deployment without ripping/replacing gear. Reliable and secure fan connectivity.
Event Coordinator/ Promoter	Design and launch experiences that keep fans engaged and spending during events (sports ops, concert ops -> translating APIs into fan-facing features)	Fans are more engaged during events; higher spend per attendee.
Team/Franchise Commercial Lead	Turn digital engagement into new revenue streams and sponsorship activations. (budget controls, sponsorships)	Incremental revenue per ticket, stronger sponsor activation and loyalty growth.
Developer / Vendor Partner	Builds the apps and integrations (AR, betting, loyalty) by extending Charter's APIs into usable products.	Faster builds, new distribution channel, monetization via rev-share.
Charter AE / Customer Success Manager	The seller that translates APIs into business value stories that venues will buy.	Pipeline growth, recurring API revenue.

Journey

A venue CTO starts by exploring Charter's BrytelQ API catalog.

Instead of a wall of technical endpoints, they find curated bundles mapped to real-world problems like a "*Stadium & Concert Experience Pack*" built around **Location Verification, SSID Management and QoS APIs**. This gives the CTO confidence that they can modernize fan experiences without ripping out existing Cisco or Aruba hardware.

Working alongside an event coordinator, they enter a sandbox where the **Location Verification API** simulates fans moving through zones within the venue. They test how General Admission fans at a football game can receive live stats, Premium ticket holders at a concert unlock set lists and AR visuals and VIPs in an opera house or esports arena enjoy backstage streams, exclusive content or priority bandwidth powered by the **QoS API**. The **Simulation/Test Data API** makes it safe to trial these flows without real traffic, reducing perceived risk and speeding buy-in.

Once approved, the integration begins.

The CTO's team uses the **SSID Management API** and vendor adapters to configure event-specific WiFi profiles across multiple venue types. Developers call the **Fan Entitlement API** to bind each attendee's ticket or access level to a device session. During pilots, access is granted or revoked in real time by the **Location Verification API** and enforced by Charter's Zero Trust policies. Fans and concertgoers immediately notice the difference, while IT monitors attach rates, bandwidth quality, and session drops through **Monitoring APIs**.

The impact is immediate.

High school stadiums see parents upgrading for premium highlight reels. Esports arenas see connect rates spike and sponsors activating in-game overlays. Concert promoters upsell backstage content or merchandise bundles tied to Premium tiers.

Opera houses give VIP patrons curated content and second-screen experiences. Across all every context, the **Monetization API** tracks per-seat revenue and sponsor ROI, giving commercial leads dashboards that tie digital engagement directly to dollars.

Over time, developers extend the platform through the **Marketplace API**, offering AR experiences, loyalty programs, betting apps and educational overlays. Venues simply plug them in with entitlements and QoS already handled by BryteIQ.

What began as a pilot in one section of one stadium evolves into a repeatable playbook for any live venue. Fans feel immersed and personally recognized while still connected to the collective energy of the crowd. Venues unlock measurable revenue streams and Charter positions itself as the platform that transforms live events of every kind into immersive, high revenue generating experiences.

Feature Set

Feature / API	Status	Description	Use Case
Location Verification API	Beta/Coming Soon	Confirms device location, maps to venue zones, enforces geofencing.	Core to stadium/concert tiering, instant cutoff when fans leave.
SSID Management API	Existing	Creates and rotates event SSIDs, controls access policies.	Event WiFi configuration, per-zone or per-tier profiles.
QoS / Speed on Demand API	Beta / Roadmap	Prioritizes bandwidth/latency for VIP apps or specific use cases.	VIP tier streaming, esports low-latency experiences.
Zero Trust Policy Hooks (ZTNA)	Service-layer, not an exposed API yet	Constant verification and auto-revoke based on context (location + identity).	Security + instant revocation for leaving fans, staff zones.
Real-Time Monitoring / Analytics API	Existing	Streams telemetry (attach rates, throughput, drops, heatmaps).	Venue IT dashboards, NPS monitoring.

WiFi Sensing API	Beta/Coming Soon	Uses WiFi signals to detect presence/movement beyond connection logs.	Security (restricted areas), operational insights.
Partner Integration APIs	Existing	Lets third-party apps hook into BrytelQ (CAMARA-aligned).	Ecosystem growth (AR, betting and loyalty).
Simulation / Test Data API	New	Provides sandboxed data/traffic patterns for safe evaluation and testing.	Reduces risk during the buy-in stage due to proof of value and identification of integration complexities.
Fan Entitlement API	New	Resolves attendees ticket class, device, tier and entitlements in one call to differentiate service levels	Simplifies mapping for devs, powers GA/Premium/VIP flows.
Monetization / Billing API	New	Tracks per-seat usage, revenue from upsells, sponsor delivery.	Commercial lead dashboards, ROI reporting.
Marketplace API	New	Catalog for certified apps/plugins (AR, betting, loyalty).	Provides a certified app catalog that venues can enable instantly. (AR, betting, loyalty etc) Aggregates partner innovation, drives new revenue and makes BrytelQ hard to replace once embedded.

MVP Feature Set

Feature / API	Use Case
Location Verification API	Confirms device is inside the venue and maps to zones for geofencing and tiered access. Proves context awareness.

SSID Management API

Creates, manages and rotates event WiFi networks without hardware changes.

Proves simplified adoption.

Zero Trust Policy Hooks (ZTNA)

Continuously verifies device sessions and auto-revokes access when context changes.

Provides Security.

QoS / Speed-on-Demand API

Prioritizes bandwidth and latency for Premium/VIP tiers or specific apps.

Proves potential for monetization.

Why?

- **Lower complexity & risk** → fewer Access Points (APs), smaller crowds and easier to pilot Location/SSID/QoS APIs.
- **Faster feedback loops** → small events provide quick proof of attach rate, upsell conversion, NPS impact.
- **Budget fit** → small venues can't afford full enterprise systems but API bundles are modular and cost-accessible.
- **Existing partnerships** → many high schools, colleges and community venues already have Charter relationships (cable/ISP) so it's easy to upsell BrytelQ pilots.
- **Proof points for scale** → successful small pilots become case studies that de-risk integration and enterprise sales to pro stadiums.

Functional Requirements

- Given** a fan device connects inside the venue **when** the Location Verification API is called **then** access is granted **when** outside the venue **then** access is revoked.
- Given** an event is scheduled **when** the venue IT team configures SSIDs via the SSID Management API **then** new networks are created or rotated without hardware changes.
- Given** a fan has a ticket tier (GA, Premium, VIP) **when** they authenticate via the venue app **then** the Zero Trust hooks enforce access policies tied to their tier.
- Given** Premium or VIP traffic spikes during an event **when** QoS policies are applied **then** bandwidth for GA traffic is deprioritized so Premium/VIP sessions remain seamless.

Non-Functional Requirements

- Given** the APIs are deployed **when** an event is live **then** they must maintain 99.9% uptime to ensure reliability.
- Given** a venue uses Cisco, Aruba, or Extreme gear **when** BrytelQ APIs are integrated **then** they must function without requiring custom hardware changes.
- Given** a developer accesses BrytelQ **when** they open the portal **then** they should find clear documentation and sample calls to reduce time-to-adoption.
- Given** API traffic is transmitted **when** requests are made **then** all calls must be encrypted and authenticated to protect security.

Compliance and Regulatory Requirements

All requirements for compliance, reporting and regulatory needs go here. Since this is a thought exercise it's not necessary to go into details beyond calling out that they should exist. (i.e., GDPR, CCPA, consent, marketplace certification, logging and audit trails, etc)

Stakeholder Activities

Task / Activity	Charter PM & AE	Venue CTO/IT	Event Coordinator / Commercial Lead	Developer Partners
Define use case bundle	R/A	C	I	C
Pitch & collect feedback	R/A	I	C	I
Configure APIs (SSID, QoS, Location)	C	R/A	I	C
Define tiers & pricing	C	I	R/A	C
Integrate BrytelQ APIs with venue systems	C	C	I	R/A
Develop extensions (AR, loyalty, betting, etc.)	I	I	C	R/A

Staffing & Planning Considerations

Plan (3 Months)

Month 1	Month 2	Month 3
<ul style="list-style-type: none"> • Team onboarding and project kickoff • Environment and API setup (Location, SSID, QoS, ZTNA) • Basic functionality development (initial API calls, configs) 	<ul style="list-style-type: none"> • Core feature development (tiered access flows, QoS policies) • Internal testing of fan experience tiers (GA / Premium / VIP) • Collect and integrate early feedback from venue IT + coordinators 	<ul style="list-style-type: none"> • Refinements to APIs and policies based on feedback • Security, compliance, and performance testing • Final adjustments and pilot launch preparation • Go-live with small-venue pilot (single stadium section / concert hall)

Key Milestones

- Week 1-2** Team onboarding and initial project kickoff; environment setup and API access
- Week 3-6** Development of core functionalities with Location Verification, SSID Management, QoS and Zero Trust hooks.
- Week 7-8** Initial internal testing with venue IT and event coordinators; early feedback collection.
- Week 9-10** Implementation of feedback and refinement of tiered access flows and QoS policies.
- Week 11** Final testing including security, compliance and performance checks across APIs.
- Week 12** Launch preparation and limited pilot go-live in a selected venue.

Constraints

- Some APIs (Location Verification, QoS) are in beta; delays or instability may impact MVP scope.
- Smaller venues may lack dedicated IT staff; integration support from Charter could be required.

- Not all venues run Cisco/Aruba/Extreme gear; missing vendor adapters could slow adoption.
- MVP assumes fans connect to venue WiFi; attach rates may be lower without strong incentives.
- Venues may hesitate to charge for digital tiers until ROI is proven with pilots.

Team Composition

1. **Product Manager (Charter):** Owns vision, requirements, roadmap and success metrics; point of contact with venue.
2. **Account Executive (Charter):** Manages customer relationship, ensures pilot adoption, gathers feedback from venue leadership.
3. **1–2 Engineers (Charter):** Integrate APIs, configure tiered access flows, ensure interoperability with existing venue hardware.
4. **Designer (Shared Resource):** Creates simple “fan”-facing flows (e.g., app prompts, WiFi onboarding screens, policy/provisioning install flow).
5. **Venue CTO/IT Lead:** Handles local WiFi setup, SSID config, troubleshooting during pilot.
6. **Event Coordinator/Commercial Lead:** Defines fan tiers (GA/Premium/VIP), sets pricing/experience models, measures adoption.
7. **Developer Partner (Optional):** Builds or integrates third-party apps (AR, loyalty, betting) once MVP APIs are in place.

Key Performance Indicators (MVP Only)

KPI	Definition	Target Range (Pilot)	Description
Connect Rate	% of attendees in-venue who connect to WiFi	~25-40% of attendees	Proves Location Verification + SSID Mgmt APIs drive adoption
Session Stability	% of sessions without drops or throttling complaints	≥ 95% stable sessions	Validates QoS and ZTNA reliability in live use
Tier Uptake	% of users in Premium or VIP tiers vs. GA	10-15% of connected fans	Shows APIs enable differentiated experiences that fans value

Fan Satisfaction (NPS / Survey)	Measured uplift in satisfaction for connected vs. non-connected fans	+15 point uplift	Demonstrates direct impact on fan experience
Venue IT Effort	Hours of setup/config saved vs. baseline WiFi setup	≥ 30% reduction in setup time	Proves MVP simplifies work for small venue IT teams
Pilot ROI Signal	Revenue or sponsor value tied to Premium/VIP features	Initial \$5–10 per Premium/VIP user	Provides early signal that monetization potential exists

Target Range Assumptions

1. Connect Rate (25-40%)

Based on industry data showing typical venue WiFi attach rates at 20–30%, 25% proves BrytelQ beats baseline while 40% is ambitious.

2. Session Stability (≥95%)

Based on enterprise WiFi standards of 95–99% uptime, 95% is a typical defensible MVP threshold to demonstrate APIs don't introduce instability.

3. Tier Uptake (10–15%)

Based on upsell benchmarks (food, merchandise, VIP add-ons) are usually in single digits so 10–15% is a reasonable goal that demonstrates fans value differentiated digital tiers.

4. Fan Satisfaction (+10 NPS uplift)

Based on research showing +10 NPS is a statistically meaningful improvement that reflects real impact without overpromising.

5. Venue IT Effort (≥30% reduction)

Based on manual setup baselines for typical SSIDs and policies APIs should automate at least a 1/3 of tasks, making 30% a credible efficiency gain.

6. Pilot ROI Signal (\$5–10 per Premium/VIP user)

Based on average per-fan digital spend in sports and entertainment pilots this range reflects an early but realistic signal of monetization potential.

Supporting Research

Boldyn Networks

- The future of fan experience belongs to truly connected venues
<https://www.boldyn.com/us/news/the-future-of-fan-experience-belongs-to-truly-connected-venues-study-reveals>

Stadium Tech Report

- 2023 Stadium Connectivity Outlook Survey White Paper (PDF)
<https://stadiumtechreport.com/wp-content/uploads/2023/11/2023-Stadium-Connectivity-Outlook-Survey-White-Paper.pdf>
- New fan survey from Boldyn dives deep into connectivity's impact
<https://dev.stadiumtechreport.com/news/new-fan-survey-from-boldyn-dives-deep-into-connectivitys-impact-on-live-events/>
- Survey Results & White Paper (2023 Stadium Connectivity Outlook)
<https://www.stadiumtechreport.com/feature/survey-results-are-here-download-results-and-white-paper-today/>

CommScope

- Boldyn Networks Deploys Wi-Fi 7 from RUCKUS at Camping World Stadium for Seamless Fan Experience
<https://www.commscope.com/press-releases/2024/boldyn-networks-deploys-wi-fi-7-from-ruckus-at-camping-world-stadium-for-seamless-fan-experience/>

Key Assumptions

- Location Verification and QoS APIs are stable enough for MVP.
- A small venue partner commits to the pilot.
- Venue uses compatible hardware (Cisco/Aruba/Extreme).
- Fans will connect to WiFi if incentivized.
- Lean Charter team (PM, AE, 1–2 engineers + venue IT) can deliver.
- MVP scope stays limited to Location, SSID, QoS, and ZTNA APIs.