**🌐 QuantumStream REST API – External Integration Guide**

**📦 Feature:** RESTful API Access\ **🛠️ Version:** v1.6.2\ **📅 Last Updated:** July 2025\ **🎯 Objective:** *"Enable seamless integration with external systems through secure, programmable endpoints."*

**🧠 Overview**

The **QuantumStream REST API** provides a standardized interface for external applications and services to interact with QuantumStream pipelines. Designed for automation, monitoring, and orchestration, the API allows developers to start and stop streams, retrieve metrics, and manage configurations programmatically.

All endpoints are secured via API key authentication and are accessible over HTTPS.

**🔐 Authentication**

* **Method:** API Key (passed via HTTP header)
* **Header Format:**

Authorization: Bearer <your-api-key>

* **Key Management:**\ API keys are generated and managed through the **Admin Panel** under the **"API Access"** section. Keys can be scoped to specific permissions and environments.

**📋 Available Endpoints**

| **Endpoint** | **Method** | **Description** |
| --- | --- | --- |
| /stream/start | POST | Starts a specified stream |
| /stream/stop | POST | Stops a running stream |
| /stream/status | GET | Returns the current status of a stream |
| /metrics | GET | Retrieves real-time performance metrics |
| /config | GET | Fetches the current stream configuration |
| /logs | GET | Streams recent log entries |
| /diag | GET | Returns a diagnostics report for the stream |

**🚀 Example Usage**

**Start a Stream**

curl -X POST https://api.quantumstream.io/stream/start \

-H "Authorization: Bearer YOUR\_API\_KEY" \

-H "Content-Type: application/json" \

-d '{"stream\_id": "user\_activity\_stream"}'

**Retrieve Metrics**

curl -X GET https://api.quantumstream.io/metrics \

-H "Authorization: Bearer YOUR\_API\_KEY"

**📊 Metrics Returned**

The /metrics endpoint provides:

* records\_processed\_per\_sec
* average\_latency\_ms
* error\_rate\_percent
* uptime\_seconds
* memory\_usage\_mb
* cpu\_utilization\_percent

Metrics are returned in JSON format and can be integrated into dashboards or monitoring tools.

**🧪 Diagnostics & Logs**

Use /diag to retrieve a full health report, including:

* Stream uptime
* Node connectivity
* Configuration mismatches
* Error summaries

Use /logs to stream the latest log entries for debugging and auditing purposes.

**🧭 FAQs**

**Q: Can I restrict API keys to specific streams?**\ A: Yes. When generating a key in the Admin Panel, you can define scope and permissions.

**Q: Is rate limiting enforced?**\ A: Yes. The default limit is 100 requests per minute per key. Contact support to request an increase.

**Q: Can I use the API in CI/CD pipelines?**\ A: Absolutely. The API is fully scriptable and supports non-interactive authentication.

**Q: Is there a sandbox environment?**\ A: Yes. Use the sandbox.quantumstream.io base URL for testing and development.

The QuantumStream REST API empowers developers to build robust, automated, and secure integrations—bridging the gap between real-time data pipelines and the broader ecosystem.