

Contest Log Analytics

Version: 1.2.0 Date: 2025-12-18

--- Revision History ---

[1.2.0] - 2025-12-18

Added

- Documented Public Log Archive (Fetch API) capabilities.

[1.1.0] - 2025-12-15

Changed

- Updated "Introduction" to use "Sports Analytics" metaphor.

- Replaced CLI-focused "Installation and Setup" with "Web Dashboard" focus.

[1.0.0] - 2025-12-06

Added

- Added `wrtc_propagation` and `wrtc_propagation_animation` to the list

of Available Reports.

[0.94.0-Beta] - 2025-12-06

Changed

- Updated version to 0.94.0-Beta to reflect the Phase 1.5 Stabilization release.

Removed

- Removed `multipliers_by_hour` from the list of Available Reports.

[0.91.1-Beta] - 2025-10-11

Added

- Added an introduction to explain the concept of Contest Analytics.

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- Added sections linking to the Installation, User, and Report

Interpretation guides.

[0.91.0-Beta] - 2025-10-10

The Contest Log Analytics is a "Sports Analytics" engine for amateur radio contesting. Just as a sports team watches "game tape" to understand why a play failed, this tool analyzes your logs to understand *why* a score was achieved. It answers the critical questions: Was my strategy of running on 20 meters more effective than my competitor's S&P strategy? Which specific multipliers did they work that I missed?

Key Features

- **Data-Driven Architecture:** Uses simple JSON files to define the rules, scoring, and exchange formats for each contest, making the tool highly extensible.
 - **Run/S&P Heuristics:** A sophisticated, multi-pass heuristic analyzes QSO timing and frequency to classify each contact as "Run," "Search & Pounce," or "Unknown," providing a clear picture of operating strategy even though Cabrillo logs do not record this data explicitly.
 - **Unique vs. Common QSO Analysis:** The analyzer precisely identifies "unique" QSOs (worked by only one of two logs) and "common" QSOs (worked by both), breaking them down by Run/S&P status to reveal strategic advantages.
 - **Cumulative Difference Plots:** Visualizes the "Zero Line" of competition. Above zero means you are leading; the slope indicates your momentum relative to your competitor.
 - **Interactive Replay:** Generates an interactive HTML dashboard that replays the contest hour-by-hour, allowing you to visualize momentum shifts.
 - **Annotated CSV Output:** Generates detailed, "annotated" CSV files from the processed logs, perfect for loading into Excel or other tools for custom analysis and prototyping.
 - **Contest-Specific Scoring:** A modular system calculates QSO points based on the official rules for supported contests (ARRL-DX, ARRL-SS, CQ-WPX, CQ-WW).
 - **Dynamic Reporting Engine:** A flexible, "plug-and-play" system for generating a wide variety of text, plot, and chart-based reports.
 - **Public Log Archive Integration:** Automated fetching of competitor logs from public archives (currently supports CQ WW) directly within the Web Dashboard.
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Installation and Setup

Preferred Method: Web Dashboard (Docker)

The easiest way to use the analyzer is via the containerized Web Dashboard.

1. **Install Docker Desktop.**
 2. **Clone the Repository.**
 3. **Run:** `docker-compose up --build`
 4. **Open Browser:** Navigate to `http://localhost:8000`.
- **Note:** The Public Log Archive feature requires an active internet connection from within the container to scrape external log sources.

Advanced Method: CLI

For automated workflows or developers, the Command Line Interface is available. See `Docs/InstallationGuide.md` for detailed Python/Conda setup instructions.

Usage

The analyzer is run from the command line using `main_cli.py`. The examples below show basic usage. For a complete list of all command-line options, available reports, and usage details, please refer to the `Docs/UsersGuide.md`.

Basic Syntax

```
python main_cli.py --report <ReportID|all|chart|text|plot|animation|html> <LogFile1> [<LogFile2>]
```

Examples

- **Generate all available reports for two logs:**

```
python main_cli.py --report all Logs/2024/cq-ww-cw/k3lr.log Logs/2024/cq-ww-cw/kc1xx.log
```

- **Generate a specific report (Score Summary) for a single log:**

```
python main_cli.py --report score_report Logs/2024/cq-ww-cw/k3lr.log
```

- **Generate a Missed Multipliers report for CQ WW Zones:**

```
python main_cli.py --report missed_multipliers --mult-name Zones Logs/2024/cq-ww-cw/k3lr.log
```

Supported Contests

The analyzer uses the `CONTEST:` field in the Cabrillo header to apply contest-specific rules. The following contests are currently supported:

- ARRL 10 Meter
- ARRL DX (CW & SSB)
- ARRL Field Day
- ARRL Sweepstakes

- CQ 160-Meter
 - CQ WPX (CW & SSB)
 - CQ World Wide DX (CW & SSB)
 - IARU HF World Championship
 - North American QSO Party (NAQP)
 - WAE (CW & SSB)
 - WRTC (via IARU-HF log)
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Available Reports

All generated files are saved to a structured directory under `reports/YYYY/CONTEST_NAME/`. For a detailed explanation of how to interpret each report, please see the `Docs/ReportInterpretationGuide.md`.

Animation Reports (`animations/`)

- `hourly_animation`: Hourly Rate Animation
- `wrtc_propagation_animation`: WRTC Propagation Animation

HTML Reports (`html/`)

- `html_qso_comparison`: HTML QSO Comparison Report

Chart Reports (`charts/`)

- `chart_point_contribution`: Point Contribution Breakdown
- `chart_point_contribution_single`: Point Contribution Breakdown (Single Log)
- `qso_breakdown_chart`: QSO Breakdown Chart

Plot Reports (`plots/`)

- `band_activity_heatmap`: Band Activity Heatmap
- `comparative_band_activity`: Comparative Band Activity
- `comparative_band_activity_heatmap`: Comparative Band Activity Heatmap
- `comparative_run_sp_timeline`: Comparative Activity Timeline (Run/S&P)
- `cumulative_difference_plots`: Cumulative Difference Plots
- `point_rate_plots`: Point Rate Comparison Plots
- `qso_rate_plots`: QSO Rate Comparison Plots
- `wrtc_propagation`: WRTC Propagation by Continent

Text Reports (`text/`)

- `comparative_continent_summary`: Comparative Continent QSO Summary
 - `rate_sheet_comparison`: Comparative Rate Sheet
 - `comparative_score_report`: Comparative Score Report
 - `continent_breakdown`: Continent QSO Breakdown
 - `continent_summary`: Continent QSO Summary
 - `missed_multipliers`: Missed Multipliers Report
 - `multiplier_summary`: Multiplier Summary
 - `qso_comparison`: QSO Comparison Summary
 - `rate_sheet`: Hourly Rate Sheet
 - `score_report`: Score Summary
 - `summary`: QSO Summary
 - `text_wae_comparative_score_report`: WAE Comparative Score Report
 - `text_wae_score_report`: WAE Score Summary
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