



Common Alerting Protocol (CAP)

Standards-based, all-hazards, all-media public alerting

<https://preparecenter.org/initiative/common-alerting-protocol-implementation>

Key Points

- Offers a simple, general, and consistent format for all-hazard emergency alerts and public warnings over all networks and warning systems.
- Facilitates the detection of emerging patterns in local warnings of various kinds.
- Provides a template for effective warning messages based on best practices.

State of the Art

The common alerting protocol (CAP) provides an open, non-proprietary message format for all types of alerts and notifications. It is a globally used and ITU recommended standard (Recommendation ITU-T X.1303) that is not limited to any particular application or telecommunications method. The CAP format is compatible with existing and emerging formats and techniques, while offering enhanced capabilities that include:

- Flexible geographic targeting using latitude/longitude shapes and 3D geospatial representations.
- Combining data and text fields, so it can integrate into different communication channels.
- Multilingual and multi-audience messaging.
- Phased and delayed effective times and expirations.
- Enhanced message update and cancellation features.
- Template support for framing complete and effective warning messages.
- Compatibility with digital encryption and signature capability.
- Facility for digital images and audio.

Core Contributions

CAP reduces costs and operational complexity by eliminating the need for multiple custom software interfaces to the many all-hazards warning sources and dissemination systems. CAP's message format can be converted to and from the formats of many sensor and alerting technologies, forming a basis for a technology-independent national and international "warning Internet" and enabling the integration of actionable guidance directly into an alert.

Advantages

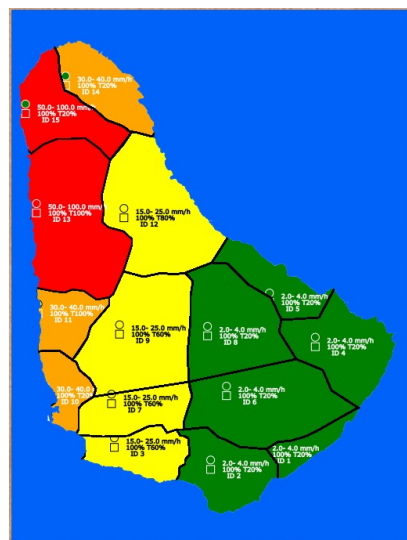
- Provides a single input to activate all kinds of alerting and public warning systems.
- Ensures consistency in the information transmitted over multiple delivery systems.
- Normalizes warnings from various sources so they can be geographically specified, aggregated, and compared for helping situational awareness, pattern detection, and data analysis.
- Can be delivered directly to alert recipients over various networks, including data broadcasts.



Common Alerting Protocol Implemented by the Barbados Meteorological Services

Barbados Meteorological Services (BMS) have been using CAP in an automated capacity since 2020. They issue a general forecast for the entire island and impact-based forecasts within predetermined zones, supported by green-yellow-orange-red colour coding. These zones are based on the island's watersheds, rather than parish boundaries.

Forecasts are issued for rainfall, winds, marine conditions, haze, and severe thunderstorms, indicating actions to take. Thus, ideas for anticipatory action are part of the warning system, with maps showing the location and distribution of expected weather conditions and responses.



CAP alerts are automatically issued for orange and red alert forecasts (watches and warnings respectively), helping to avoid alert fatigue and hence complacency for acting, which could occur if alerts were always issued for yellow and green. The CAP alerts are disseminated from Apparatus, an in-house application developed by Mr. Sabu Best and Mr. Jonathan Alleyne at BMS.

One issue facing BMS has been the planning and public interaction to prevent adverse reactions when interrupting radio programmes. The test to interrupt radio was unsuccessful due to a coding error, with work and testing on radio interrupts continuing. As well, instances occurred where CAP alerts were not disseminated due to the CAP server (which is not maintained by BMS) being overloaded or backlogged.

While overcoming the difficulties, monitoring for new challenges, and evaluating public responses, CAP remains an integral part of Barbados' everyday national early warning system. It is one of the primary methods of communicating with the country's public, especially for adverse weather.



Flooding in Barbados.
(photos by Ilan Kelman).

Above: An inundated cemetery.

Left: Fields along the south coast.