Alert Notification System Router

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The Alert Notification System Router (ANSR) software provides satellite operators with notifications of key events through pagers, cell phones, and e-mail. Written in Java, this application is specifically designed to meet the mission-critical standards for mission operations while operating on a variety of hardware environments.

ANSR is a software component that runs inside the Mission Operations Center (MOC). It connects to the mission’s message bus using the GMSEC [Goddard Space Flight Center (GSFC) Mission Services Evolution Center (GMSEC)] standard. Other components, such as automation and monitoring components, can use ANSR to send directives to notify users or groups. The ANSR system, in addition to notifying users, can check for message acknowledgments from a user and escalate the notification to another user if there is no acknowledgement.

When a firewall prevents ANSR from accessing the Internet directly, proxies can be run on the other side of the wall. These proxies can be configured to access the Internet, notify users, and poll for their responses. Multiple ANSRs can be run in parallel, providing a seamless failover capability in the event that one ANSR system becomes incapacitated.

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Lossless Compression of Classification-Map Data

This algorithm performs better than do general-purpose image-data compression algorithms.

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A lossless image-data-compression algorithm intended specifically for application to classification-map data is based on prediction, context modeling, and entropy coding. The algorithm was formulated, in consideration of the differences between classification maps and ordinary images of natural scenes, so as to be capable of compressing classification-map data more effectively than do general-purpose image-data-compression algorithms.

Classification maps are typically generated from remote-sensing images acquired by instruments aboard aircraft (see figure) and spacecraft. A classification map is a synthetic image that summarizes information derived from one or more original remote-sensing image(s) of a scene. The value assigned to each pixel in such a map is the index of a class that represents some type of content deduced from the original image data — for example, a type of vegetation, a mineral, or a body of water — at the corresponding location in the scene. When classification maps are generated onboard the aircraft or spacecraft, it is desirable to compress the classification-map data in order to reduce the volume of data that must be transmitted to a ground station.