

Airborne Network Performance Management (AN-PM) Intelligent Agent

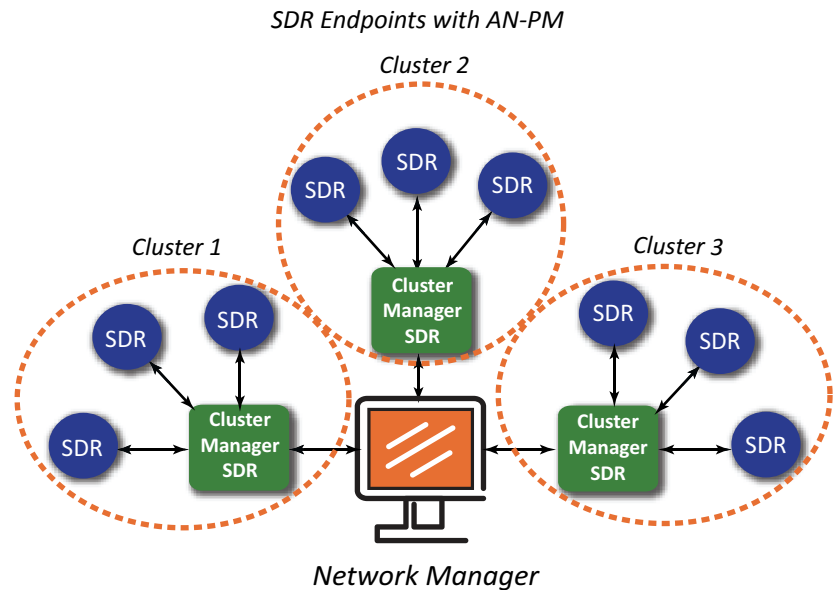
Performance Monitoring for Highly Dynamic Wireless Networks

Embedded in each Joint Tactical Radio System (JTRS) radio, the AN-PM intelligent-agent (IA) software monitors various performance parameters and communicates with other JTRS radios on the network to track, monitor, and report performance and parameters to a higher level network element. Using a self-healing hierarchy of software agents, AN-PM delivers end-to-end monitoring of highly dynamic wireless networks.

Performance information tracked by the AN-PM software is communicated to the network management system through the cluster manager - a software-defined radio (SDR) that is identified as monitoring multiple wireless endpoints within the network. As performance data changes, the AN-PM policy-based software assists the network manager in making network modifications and pushes the new policy data out to the SDR endpoints with minimal human intervention.

The diagram to the right shows a typical implementation of AN-PM in a software-defined radio network. AN-PM software resides in each SDR endpoint. An SDR is identified within the network as a cluster manager, retrieving performance data from assigned endpoints and communicating the data to the ground-based network manager.

Because of the dynamic nature of SDR networks and the policy-based implementation of AN-PM software, performance can be balanced across the network, failed endpoints are automatically dropped, and the cluster manager can be dynamically re-assigned without impacting network integrity and performance.



Highlights:

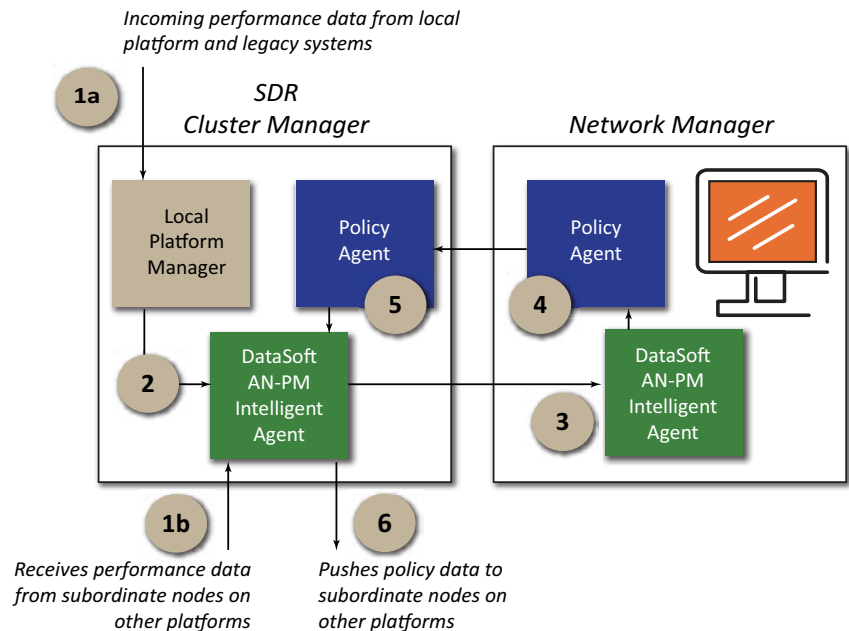
- Policy Based
- Dynamic
- Flexible
- Reliable

The very nature of wireless networks that move at high speeds demands that each SDR within the network be equipped with intelligence - such as AN-PM software - that monitors performance and dynamically adjusts to network conditions.

AN-PM - SDR Performance Monitoring

The diagram to the right demonstrates the typical AN-PM process:

1. Performance data is received from various legacy and SDR endpoints
2. Information is passed to the AN-PM intelligent agent (IA) in the cluster manager
3. The cluster manager reports the performance information to the network manager
4. The network manager adjusts the policies and pushes those changes out to the cluster manager
5. The cluster manager IA receives the new policy data
6. The cluster manager IA pushes the policy changes out to subordinate SDRs



Features

- Intelligent agent for policy-based network management
- Embedded in each wireless node
- Monitors parameters such as transmitted, received and dropped packets
- Monitored performance parameters are configurable through a policy-based management system
- Dynamically adjusts to QoS network conditions
- Supports next generation Airborne Network and Objective Gateway
- End-to-End monitoring of a multi-hop network
- Compatible with networks operating with multiple waveforms

Benefits

- AN-PM adapts quickly to changing conditions without impacting network performance
- Intelligent reporting overcomes monitoring bottlenecks
- Embraces distributed architecture to save bandwidth and avoid network bottlenecks inherent in fixed network configurations
- Prevents any one SDR endpoint in the network from causing the entire network of radios to fail
- Flexible software foundation of AN-PM makes it easy to update each SDR with new policies as network conditions change

About DataSoft

DataSoft specializes in software and hardware research, design, and engineering of customized components, products, middleware, and protocols for communication systems based on software-defined radio technologies.

As the recipient of multiple Department of Defense research grants (SBIR), DataSoft is actively working on projects for the Joint Tactical Radio System (JTRS) that enable superior wireless communications capabilities. Expertise includes SCA, MANET, tunable RF components, network protocols, advanced network management, modeling and simulation.

Headquartered in Scottsdale, Arizona, DataSoft has a successful history of high technology innovation for multiple markets covering both defense and commercial applications.

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