

The  
**Warrior**  
Surveillance System



# The Warrior Monitoring System

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ATCi's all-inclusive Warrior Satellite Monitoring system monitors satellite carriers in real-time from a central location or cohesively tie together multiple monitoring locations worldwide.

Designed for the unique requirements of government and military entities, the space-efficient packaged system is able to simultaneously process thousands of RF carriers in the X-, C-, Ka-, and Ku-bands. The Warrior's satellite reception and transmission capabilities allow for viewing of the full satellite arc, 70 plus satellites simultaneously from anywhere in the world to anywhere in the world.

All hardware, software, engineering, and installation services are included with the turnkey Warrior Satellite Monitoring System. By virtue of the Warrior's precise monitoring, full and or fractional satellite arc RF jamming can be incorporated within these systems. Mobile configurations and other custom systems are also available.

## Service/Channel Monitoring

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Monitoring no longer is based on the simply viewing video and audio, but on having the ability to associate all the necessary data that is a part of the transmission. The key pieces may be buried in the information that is transported along with the service.

The ability to quickly and efficiently construct monitoring layouts with their respective Meta-Data, audio, data, RF information, is at the core of the Warrior system. Key Meta Data elements can range from the following elements:

- Video Information, time, date, satellite, source, etc.
- Embedded Video Line data, i.e. VITSC
- Closed Captioning
- Narrative audio for the blind
- Audio Levels
- Secondary Audio channels
- Video Waveform information
- Service Transport information
- Carrier RF and Data information



To System elements;

- Logical System Status flow
- All associated pieces of equipment presenting current status, alarms and redundancy capabilities in a direct manner
- The ability to incorporate not only the core system status but also any relevant remote or isolated operations in a larger overview.

All these need to be quickly displayed to the operator in a systematic format.

As priorities and information requirements change, these elements can be re-assembled off-line quickly and implemented to provide the operator the latest desired information with the respective Meta-Data associations.

NOC layout schemas and individual monitoring sites can be changed to view the critical aspects of any transmission based on user defined properties and associations.

Features that make this ability key to any successful tracking system are as follows:

- Dynamic ability to modify the NOC monitoring layout on a per service level
- Dynamic ability to modify the NOC monitoring layout on a system control level, i.e. adding of equipment, redundancies, and features.
- Provides the ability to check new layouts off line prior to implementation
- Ability to incorporate additional Meta-Data parameters via SNMP and MIB constructs

The ability to capture and archive these transmissions in their original and/or complemented formats also becomes key in tracking trending of the satellite services being viewed or events being formulated into a chronological progression. The Warrior monitoring system has the following capabilities to aid in the capture, assembly and archiving of such events:

- Event ID tracking coordinated with the NOC asset management system will be able to provide all current event information and displayed accordingly.
- Archival of all associated event information in a “key” event id based system where archival search can be based on text or keyword associations.
- Ability to chain events via an associative keyword or id tag.
- Ability to assemble offline in association with the archival system a cohesive or chronological stream of events with associated data.

Additionally the monitoring system will be polling the healthy, availability and alarms from these subsystems.

# RF Spectrum Monitoring

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Key RF Spectrum Monitoring comprises of the Warrior geo-position, interference detection, spectrum monitoring and link power control products are the direct results of key technologies developed by the company to address satellite communications operational issues. These technologies include:

- Seamlessly integrated geo-position to detect and locate satellite interferers
- Advanced DSP techniques designed for satellite communications monitoring and control
- Flexible signal processing hardware/software architecture to meet customer evolving needs
- Carrier-under-carrier monitoring
- Monitor transponder compression and saturation problems
- Powerful uplink power control algorithms
- Industry leading digital signal processing technologies for fast, accurate reliable results
- State-of-the art user interfaces technologies for unmatched product ease-of-use
- Innovative network design for system robustness and reliability
- Design to maximize system supportability and maintainability

Government Satellite Operators that need network monitoring in multiple remote sites will select The Warrior Satellite Carrier Monitoring System.

The Warrior automatically monitors all carriers while allowing the operator to perform manual analysis. Automatic monitoring follows a pattern defined by the operator through a simple Point-and-Click Monitoring Plan application. Monitoring Plans are developed by the operator who can include any combination of downlink and uplink carriers, regardless of the satellite or transponder.

Measurement data, such as EIRP, Center Frequency, etc., is automatically stored and can be recalled for later analysis or sent via email. The Warrior calibration system can be added to the basic configuration to essentially eliminate measurement path errors.

Automatic alarms notify the responsible individuals through the User Interface Workstation, pager, and email. Stored spectral traces for selected carrier and abnormal carriers can be replayed using an Archive Trace Player Application included in the Workstation software.

Workstations are used anywhere on the network to monitor and control the remote measurement equipment. From the Main Operation Center, the operator can monitor and control all remote sites. Multiple operators can connect to the network simultaneously. The Warrior is designed to work over limited bandwidth network connections.

The Warrior has the flexibility to include the right monitoring equipment for the application. Depending on the requirement, Warrior can be offered with either a Digital Signal Processing subsystem, spectrum analyzers, or a combination of these. Likewise, The Warrior can be offered with an RF Switch that meets earth station requirements for monitoring one or more satellites.

ATCi can assist in customizing the exact system configuration for your requirements. These network features include the following information:

- Improve operator efficiency through. Automatic Monitoring and Alarming.
- Unlimited carrier monitoring of downlink and uplink.
- Examine carriers using Digital Signal. Processing for analysis and identification.
- Reports EIRP at the satellite.
- Analyze stored data and traces.
- Monitor transponder spectrum via the Internet.

# Master Control/Automation

The Master Control/Automation is tied integrally with the NOC monitoring system. This allows for the ability to provide the following features;

- Tracking of asset archival, playback, location, and/or status of any asset being captured by the system.
- Dynamic ability to add/remove aspects (Meta-Data) of assets being captured, transferred and/or assembled.
- Processing of clear and concise schedule of events at any given time with the flexibility to reorganize priorities as needed.
- Simple command constructs to allow for multiple items to act in a synchronous manner to capture all relevant data for an event or series of events.

Additionally the master Control system could be coordinating not only any local administration of the event processing but also conceivably any or multiple remote site operations. Such data could be streamed back to the core NOC system and allow for a diversified collection system.

