



Best Practices

Please note, this document is offered for reference only to be used as a general guideline for networks utilizing the 7705i MultiNet Receiver (similar guidelines are being developed for next generation 7705ii MNR networks). Not all networks are the same — each private network has a different set of variables and unique configuration. Field Technicians and Installers should always seek appropriate advice from a member of the AES Support team if they have a question or need assistance.

Based on our experience, the capacity of Subscribers supported by a set of IP Links or Hybrid Subscribers when establishing a network will be up to 1,200 Subscribers. Actual capacity may be higher or lower depending on geography, environmental factors, deployment strategies (frequency of Check-Ins, Time-to-Live settings, etc.), and quality of installations.



Factors That Impact Network Performance

The list below provides examples of the more common environmental, geographic, and programmatic factors which may affect network performance and overall capacity:

- **Drastic elevation changes in the topography or terrain — both natural and man-made**
- **Urban areas v. suburban or rural areas**
- **Density of Subscribers**
- **Subscriber deployments over a large geographic area — can require additional IP Link(s)**
- **Frequency of Check-Ins**
- **Packet TTL settings**
- **# of Events being reported within a given time period**



Maximum Network Size Recommendations

- **Subscribers per MultiNet Receiver: Up to 9,000**
- **Business Units per MultiNet Receiver: Up to 15 (maximum)**
- **IP Links (or Hybrids) per MultiNet Receiver: Driven by network need (do not exceed 9,000 Subscribers or 25 IP Links)**
- **Subscribers per IP Link: Up to 1,200 (based on factors referenced above)**

For networks that exceed the above recommendations, AES suggests implementing a multi-frequency or multi-receiver strategy whereby the network is segmented into smaller subnets.



Antenna Selection

Antenna selection is also an important aspect of network performance. Always use the lowest gain antenna possible to achieve a good signal. Using a higher gain antenna will cause overreach of the Radio Frequency signal. The following are effective distance potentials in an ideal RF environment for the various antennas available from AES (these are distance estimations only, actual performance will be affected by installation quality, cable length, and other environmental factors):

- **Rubber Duck – up to 3 miles**
- **Stealth – up to 3 miles**
- **3dB – up to 3 miles**
- **5dB – up to 5 miles**
- **6dB – up to 10 miles**
- **9dB – up to 15 miles**



Time to Live (TTL)

How to properly program and set packet 'Time To Live' (TTL) function is a topic we are frequently asked about. In most cases, the default settings will be appropriate. You may never have to use it, but in the event a condition arises causing congestion to occur you'll be glad to have the TTL functionality in place to help manage communication and maintain normal status. We strongly suggest you check to see if you have the latest firmware version release installed and use the current suggested settings for all and new default TTL values. This can help free up airwaves for critical packets:

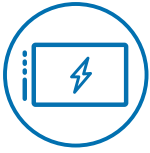
- **Check-In, Status, and Special are set to '10 minutes'**
- **Alarm, Trouble, Restoral, and *IntelliTap* are set to '3 hours'**

For full Solution and detailed instructions, please visit the Dealer Portal. If you need further assistance with access to the portal or wish to schedule an upgrade, contact our AES Support team by starting a live chat session (the 'Support Online' button on our aes-corp.com website).



Preventative Maintenance

AES recommends the implementation of a comprehensive preventative maintenance program to ensure optimal network health. Visit our website to access the AES recommended preventative maintenance plan: <http://insights.aes-corp.com/blog/preventative-maintenance>



Battery Monitoring

Regular monitoring of your batteries can help avoid potential issues like Subscribers locking up, overheating, or causing communication failures resulting in ACK Delays. A few key things to remember:

- **Bad batteries that are old and/or battery cable terminals that are corroded need to be cut and replaced before another new or used battery can be attached**
- **Batteries need to be tested on a regular basis**
- **Observing DVM readings (attach red lead to red terminal and black lead to black terminal) and writing the date of install on the batteries (like you would for an oil change on your car) can help you monitor how long a battery has been in service**

Following these few simple steps can help you avoid having to send units back for RMA/Repair due to burnt overheated components because of bad batteries.



Repairs

When components of your AES network require repair, those repairs should only be performed by a qualified AES trained technician. Failure to do so may void your product's warranty. Regardless of your product's warranty status, any repairs should be performed by an AES trained technician. There are many aspects of AES products that need to be considered during the repair cycle to ensure compatibility. Contributing factors include hardware version, firmware version, chipset, and others. AES Technical Support can assist in determining interoperability between components.



Stay Up-to-Date

As with any technology, improvements are implemented throughout a product's lifecycle. Improvements are made towards improved efficiency, reliability, and overall performance. Technologists encourage organizations to develop and implement comprehensive technology refresh strategies to ensure their investments are protected. Similarly, AES recommends that our customers implement technology refresh plans specific to their AES-IntelliNet and IntelliNet 2.0 networks. The most diligently executed maintenance plan will not prevent obsolescence or mechanical failures associated with prolonged use. As such, our customers should plan to refresh their various AES network components accordingly. Customer should inspect each component annually to verify proper operational performance and visually inspect the component's physical condition. Please refer to the most current Discontinued Products list posted on our aes-corp.com website under the Products & Services tab on the main menu bar.

The table below provides basic refresh guidance:

Network Component	Refresh Frequency
Subscriber	Every 7 to 10 years based on operational environment
IP Link	Every 7 to 10 years based on operational environment
MultiNet Receiver	Every 7 to 10 years based on operational environment
Antennas	Every 1 to 3 years for outdoor, will vary based on exposure and climate; Every 5 to 7 years for indoor
Coaxial Cable	As necessary based on physical and operational inspections; Outdoor, unprotected coaxial may require frequent replacement in harsh climates



Need technical assistance?

Our team is here for your team! Start a live chat session with one of our alarm industry experts, simply click on the Support Online button on the lower right screen of our aes-corp.com corporate website. Ask us about our Professional Services for help with network planning, site certification, review and guidance related to network management issues, Central Station moves and changes, etc.



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