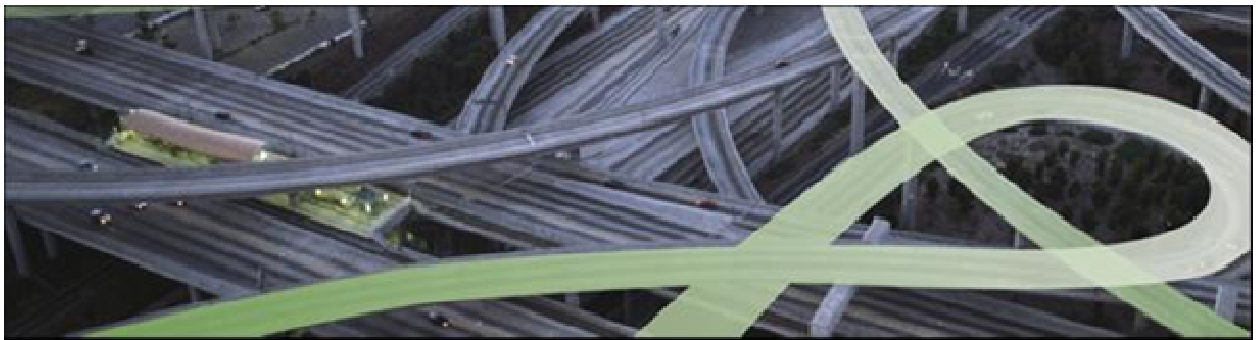




# Reliability and Redundancy ..... Second to None!

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White Paper



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The latest developments of IP video stream integration and smart database management has allowed the Citilog software team to incorporate new features that deliver higher reliability and robustness against hardware failures. With the stringent customer security and safety requirements and today’s improved technology, Citilog can provide the capability of deploying a failsafe operation for your Automatic Incident System (AID).

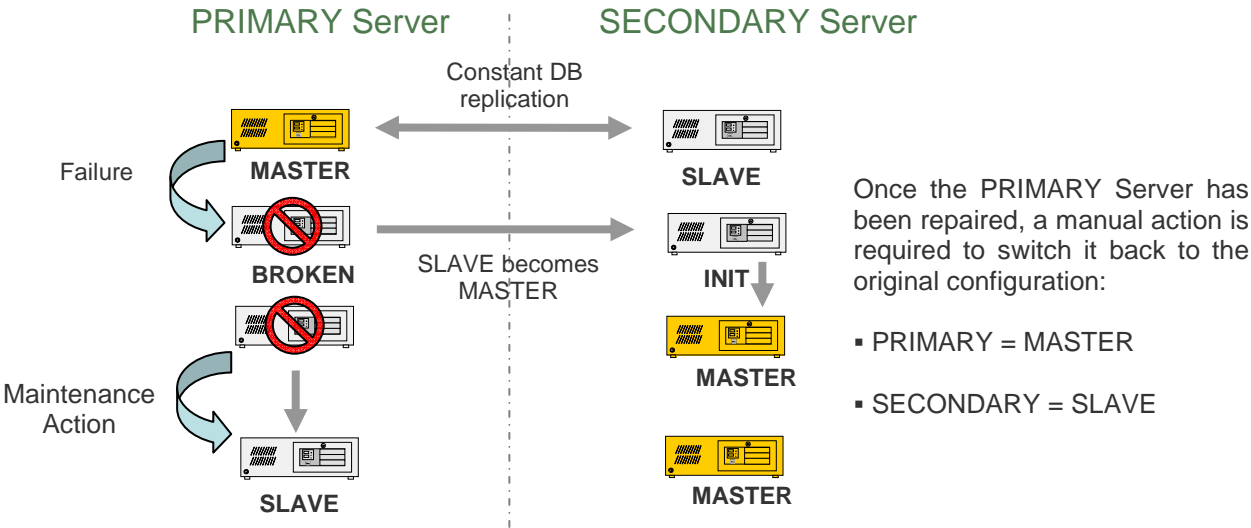
The overall safety of your roadways and tunnels is greatly enhanced and system downtime can now be kept to a minimum with these following three innovative features:

- Server Redundancy
- Analyzer Redundancy
- Hot Spare Analyzer

**Server Redundancy** is available as an option on all Citilog video systems since V6.1. This feature provides for the use of two servers, one as master and the second one as a slave. The database is continually replicated in real time between both computers, including all configuration changes, incidents and the video database files.

If a hardware failure or communication loss occurs to the PRIMARY Server, the SECONDARY Server will automatically take over for the PRIMARY Server in less than one minute. This operation is totally transparent to the operators, who will only receive a message indicating that SECONDARY Server took over for the PRIMARY. This feature has already been deployed on several sites around the world, including the *Tunnel du Vuache*, *Lyon Ring Road* and the *Tunnel de Chatillon* in France.

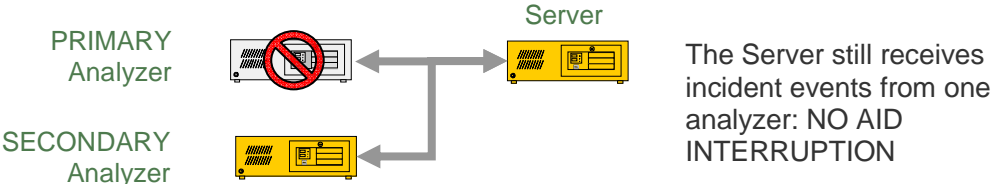
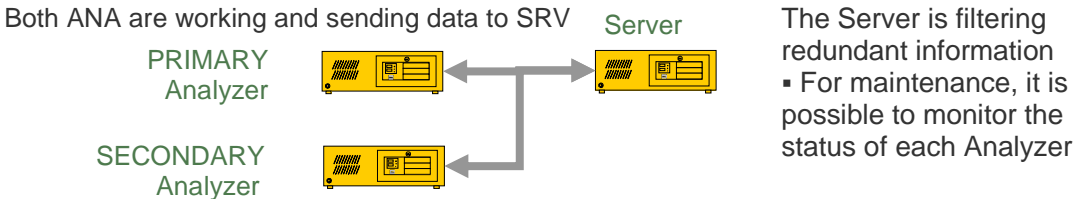
• **How it works:**



**Analyzer Redundancy** has been available as an option on all Citilog video systems since V5.3. The feature allows you to replicate all or selected analyzers and can work for both analog and IP video streams. One will be the primary analyzer and the other one the secondary analyzer. During nominal operations, both computers are analyzing the video streams in parallel with the same configuration and detection parameters, but only alarms coming from the primary analyzer are sent on to the server.

In the case of a hardware failure, or communication loss on the primary analyzer, the secondary will continue to analyze **without any interruption** and every alarm will be sent on to the server. This operation is transparent for the operators, who will only receive a message indicating that the secondary analyzer is not processing the events. This feature has been deployed on several sites in France, including the *A86 double deck tunnel*.

- **How it works:**

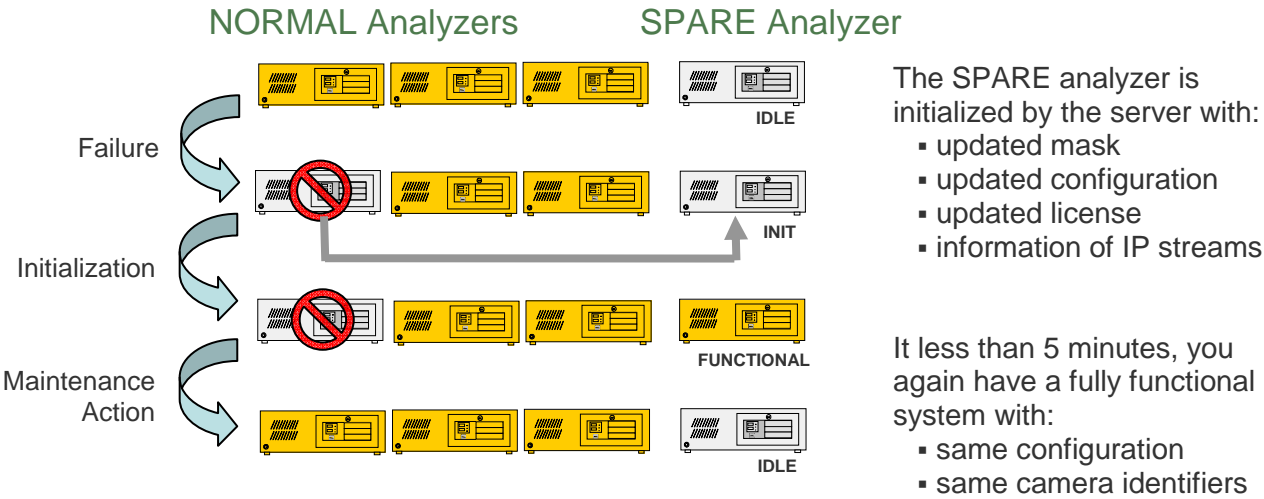


The Operator is notified of an analyzer failure and generates a maintenance action

Even though *Server Redundancy* and *Analyzer Redundancy* were innovative industry features and provided big operational improvements, the **Hot Spare Analyzer** option is unquestionably an important advancement in improving the overall security needs of AID infrastructures. This feature only works with IP video streams and became available in V6.2.

The installation of one (or more) spare analyzers will allow automatic and adaptive replacement of any faulty analyzer. To go deeper into the technical details, all analyzer configurations, such as IP stream mapping and all camera detection parameters are stored in the server database. When a failure on an analyzer is detected by the server, it automatically sends that analyzers configuration to a spare analyzer which automatically reconfigures itself in less than five minutes and begins processing the video streams. In the case of multiple spare analyzers, this operation can be repeated until all spare analyzers are used. This feature has already been deployed on several sites in France including the *Pont Evrard Tunnels*.

- **How it works:**



OK, I understand the technical details, but what are the real benefits?

*Even though Citilog provides and recommends reliable off-the-shelf industrial computers and the customer's networks are becoming more robust, hardware or communication failures can and do occur any time of the day.*

**Deploying redundant features allows you to safeguard against these unknown events. With a low cost investment, you can be assured of the highest operational uptime for your system.**

*Other video detection systems use proprietary hardware components that can also potentially fail.*

**Correct, and when that happens you are at the mercy of the OEM to provide a proprietary hardware replacement. With Citilog and our off-the-shelf hardware platform solution, hardware failures can quickly be corrected.**

*Trained maintenance engineers may not always be present on site, especially when service/support is provided by off-site integrators.*

**Citilog redundant systems allow your operators to maintain complete system operation until maintenance arrives to correct the failure.**

*Buying spare computers (for a server and/or analyzer) has a real cost to me, how do I justify?*

**By deploying and configuring your system with redundant hardware you can have the peace of mind of knowing you have operational spares on hand and that any unexpected downtime will be kept to a minimum providing you a high ROI on the system operation.**

*Most new installations today use IP video streams, is this an issue with Citilog?*

**No, Citilog analyzers are capable of supporting all IP video streams such as H.264 and RTSP. With the Hot Spare Analyzer feature, you can be assured of an immediate and automatic switch over upon failure or loss of communication.**