

RICOCHET

Voice Recording, Logging and Replay System

The Ricochet is a complete Logging and Replay System for Audio (Voice), Radar, CCTV and almost any digital data source. It is a state-of-the-art logging system based on an open architecture, with proven system design, both technically and with reference to functionality and algorithms used.

For ATC applications Ricochet conforms to standards and recommendations, imposed by ICAO (Annex 10 Volume II, chapter 3.5) and implements many industry standards such as TCP/IP, SNMP, PCI and ODBC. Support for these standards enables the system to accommodate design changes for future requirements.

Flexibility, reliability and availability have been given the highest priority in system design to achieve a completely distributed system with a “no-single-point-of-failure” philosophy. A high level of redundancy is also incorporated. For the operator, the design focuses upon user-friendliness, reducing operational stress level to a minimum.

System Description

Ricochet is a modular system capable of being expanded and interfaced with a variety of data sources.

In conventional systems, software components were normally distributed onto several computers. This has the disadvantage of requiring more hardware, which in turn generates a greater demand for spare parts while at the same time increasing the likelihood of hardware failures. Ricochet is designed in such a way as to minimise hardware requirements for the system performance required. However, additional hardware can be added at any time to expand the system when necessary. By keeping essential software on one CPU system it is possible to synchronise the playback of all sources with a high degree of accuracy.



Architecture

Ricochet is implemented on the Windows 2000™ technology platform. The use of Windows 2000™ as the underlying operating system provides access to a whole range of communication protocols, multimedia functions, utilities and tools. The software is based on a recording kernel called Ricochet. The kernel, with a set of associated utility components, forms the backbone of every logging and replay system. When creating a logging application the system is configured with a set of Device Dependent Components (DDC). The DDC's gives the logging system the distinctive characteristics it needs to perform the required tasks.

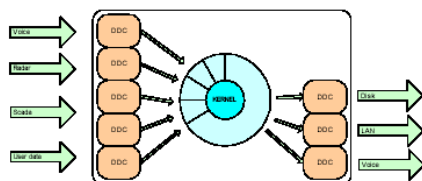


Figure 1 Ricochet Architecture

*Recording Interfaces for:
- Audio, Radar, CCTV*

*Replay Server and
Clients*

High Availability

Alarms

Remote Diagnostics

Time Synchronisation

FEATURES

- REPLAY CONTROL
- SOURCE SELECT
- TIME ZONE SELECT
- PLAYBACK CONTROLS
- VOICE ACTIVITY INDICATORS
- BOOKMARKS
- MESSAGE INDICATORS
- SIMULTANEOUS CHANNEL REPLY
- RECORDING TO STANDARD DISKS(18-50GB)
- RELIABILITY OF RAID-5
- OFFLINE STORAGE TO MO, DAT, CDRW, DVD or DLT
- WEB MAINTENANCE SERVICE
- COTS HARDWARE

By adding DDC's for different interfaces the user can record the required data source. One example of a DDC is the Audio Digitiser. Using this approach the system can be tailored to the user's requirements, even if these requirements change later on. DDC's are controlled by the Component Management system in the kernel, and new components can be added or replaced without affecting the system. DDC's can be created to interface for example: -

- **Audio** signals from radios, telephones and microphones
- **Radar** formats like ASTRIX, AIRCAT, CAA Eurocontrol
- **Protocols** like X.25, HDLC, IPX/SPX, NetBEUI, and
- **Communication interfaces** like E1 Digital G 703, T1 Digital and ISDN

Specific applications can be created to decode and interpret data for recording and replay. The interpretation can be provided on visual displays, for statistical purposes, or stored for later investigation. All data recorded by the kernel is time stamped and may be replayed with a high degree of accuracy.

Data can also be routed from one network to another. This is useful in a replay scenario because the equipment, which is normally used for displaying or handling the data in question, will be now used for replay without knowing that data is replay data and not real-time data.

Recording

All the data recorded is time stamped when stored to disc. For playback, the replay system will recognize the channels that are stored and the specific time stamps. These timestamps together with channel descriptions will be available at the replay station.

The recording server handles all incoming data and routes this to selected storage media.

Data is stored in a FAT32/NTFS file system, but the content of the file is coded to avoid tampering of data.

Time Synchronisation

The system uses the Windows 2000 TM Time service, which supports several external sources. The time synchronisation software will synchronise all computers in the recording system. It can also act as a primary time synchroniser for other Windows 2000 TM machines in the system.

Replay

Normally replay of data will be realised in a variety of ways and combinations, depending on the requirements for each application. The Ricochet Replay Control Panel can be used for replay.

Security Functions

The system uses the built in security functions of Windows 2000. In addition all server applications are running as services and there is no "log-on requirement" for the system. Security functions are implemented for all levels like configuration, maintenance, on-line operation and Web interfaces. Users may be assigned to Security Groups. Access to functionality is associated with the security group and the system can be set-up in such that replay is only allowed for users with acceptable security level, on a channel basis.

Redundancy

The redundancy can be implemented on any one or all of the following levels: -

- The digitising levels
- The Logging and Replay
- The Disk Systems (RAID 5)

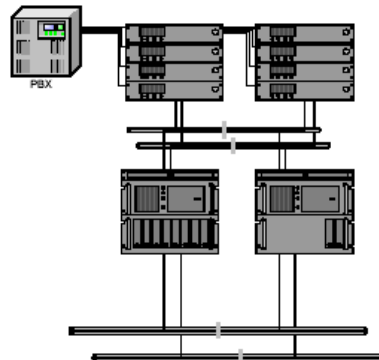


Figure 2 Redundant Ricochet Configuration



Datasheet Reference: DSx DD/MM/YY

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