

IAF HUMAN SPACEFLIGHT SYMPOSIUM (B3)

Flight & Ground Operations aspects of Human Spaceflight - Joint Session of the IAF Human Spaceflight and IAF Space Operations Symposia (4-B6.4)

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OPENVOCS REDUNDANCY CONCEPT

Abstract

System redundancy is a must have for all kind of control room application services, especially if they are mission critical like voice communications. Within the openvocs project we developed a Voice Conferencing System for Space Mission Control. This paper will showcase redundancy concepts used and implemented, starting from multiple session support over multi device support down to network link and core system redundancy.

We start with a short introduction to Voice Communication Systems (VoCS) and why they are Mission Critical. In the next chapter we will describe the redundancy concept at different system levels. We will show application level state synchronization between multiple client devices, as well as state synchronization of multiple core nodes. Afterwards we show inner core redundancy for media distribution. The redundancy description concludes with a network redundancy introduction.

Our redundancy concept works solely on state synchronization and Multicast based routing. It is tailored to the use case of Mission Control Room Conferencing. It eliminates costly redundant devices, services or hardware and instead allows to use Commercial of the Shelf (COTS) hardware for a VoCS system. Redundancy within the system is done by design and architecture. In contrast to a lot of other solutions our core redundancy concept is implemented within the clients of the system.

Once the redundancy concept is introduced we will discuss different failure cases and how these failures are handled within the concept. Discussed failures will include hardware errors of a component within the chain, network errors or software failures.

The paper will conclude with discussing the role of the operator in our redundancy concept. Particularly how an operator is informed about errors, and which steps he may need to perform for recovery. The human operating the system is the last resort of recovery and all potential failure cases should be understandable by the one operating the system.