Scaleable Intelligent Video Server System

| | |
|---|---|
| *Title* | IBC Feasibility Demonstration |
| *Revision* | A |
| *Deliverable #* | D2.1 Annex A |
| *Author* | Pete Hulme |
| *Company* | GlassHouse |
| *Date* | 25/04/2006 |
| *Filename* | SIVSS D2.1 Annex A.doc |
| *Dissemination*† | CO |

| REVISION | DATE | DESCRIPTION |
|---|---|---|
| A | 25/04/2006 | Created by PHu |
| | | |
| | | |
| | | |
| | | |
| | | |

† **CO** = Confidential (only for members of the consortium + EC); **RE** = Restricted to a stated circulation list (+ EC) *[replace this footnote with the list]*; **PP** = Restricted to other FP6 participants (+ EC); **PU** = Public

# TABLE OF CONTENTS



# List of Figures

# 1 INTRODUCTION

This document is based upon the working document "Integration and Demo Platforms Rev1_1.doc by Stewart Buchanan dated 5tbPAril 2005

## 1.1 Purpose

This document forms an annex to Deliverable 2.1, the Technology Feasibility Study and Report for the SIVSS project which has already been submitted as a deliverable.

The purpose of this document is to describe the evolution of the feasibility study platform, specifically as it relates to the delivery of a practical demonstration of the SIVSS project's feasibility at the International Broadcast Convention (IBC) in Amsterdam, Netherlands in September 2005

## 1.2 Remit

This document will describe the original reference architecture, which was used to perform the feasibility analysis in deliverable D2.1 and will show how the demonstration platform used for IBC was derived from it. T will show how the use of the demonstration platform and its derivatives can be utilised as a validation of the feasibility study and how it can and will be used to abstract the model for the ultimate configuration and instantiation of the systems test architecture.

## 1.3 Reference Architecture

The original model for SIVSS requires the derivation of a Scalable and Intelligent Video Server system based around a scalable, flexible technology architecture. The concept incorporates a cluster of multiple (n) computing nodes sharing access to a common pool of high performance data storage. Video material is ingested into, and played out from, this common pool by the nodes whilst scalability is ensured by using a data mover to intelligently move material on and off the shared high performance storage pool to prevent it filling up. Integration intelligence is enhanced by incorporating a Media Asset Manager system which ensures that the data mover always has required material available in the shared, high performance storage pool whilst ensuring that material not immediately required is migrated to the near line tape pool for bulk storage.

This reference architecture provides all of the required elements of scalability and controls systems integration, whilst being sufficiently modular to facilitate practical analysis and ultimate demonstration and testing. It is from this reference architecture that all of the modelling design and the derivation of the testing strategy and plan are developed.

The practical instantiation of the reference architecture is shown in Figure 1: Reference Architecture, based around the components that were envisaged as being included as part of the model when D2.1 was produced (early in the first year of the SIVSS project)

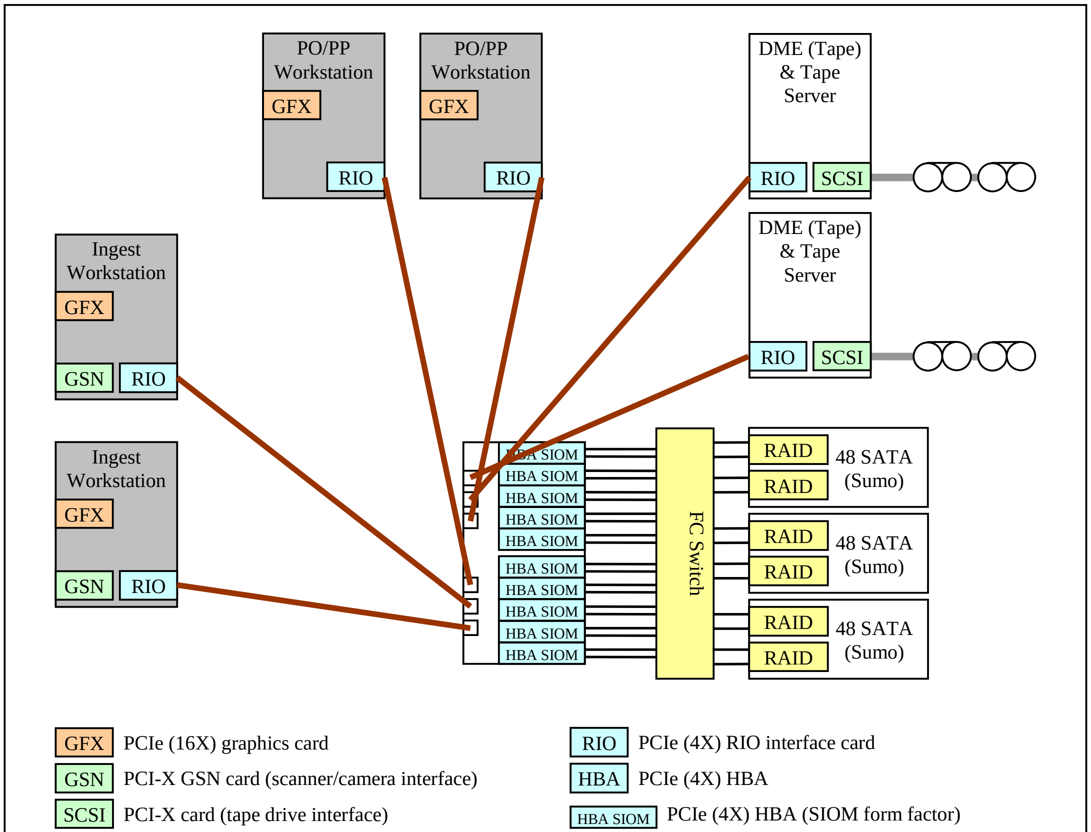


**Figure 1: Reference Architecture**

# 2 SIVSS RELATED DEVELOPMENTS

As the SIVSS project progressed it became clear that some of the technologies being developed within and outside of the project would have a fundamental impact on the current state of the art. This was especially true in the areas of advanced network switching, where the congestion management algorithms being developed have a profound and unforeseen impact on both current capability and the capacity and direction of ongoing development.

## 2.1 Demonstration Architecture

As a result of these fundamental changes, it became clear that the completion of the technological development would run longer than the envisaged timescale of the original project. The SIVSS project consortium was committed to producing a practical, public demonstration of the project at IBC 2005 in order to demonstrate the validity of the feasibility study already delivered. Accordingly it became necessary to develop a demonstration architecture, derived directly from the reference architecture, capable both of validating the feasibility study and of practical realisation in the available time.

***A practical instantiation of the demonstration architecture was achieved for IBC by using an n=2 node cluster, based around the GFS Global File System to provide the common, shared data storage. Practical storage was achieved using Xyratex storage systems within the GFS cluster and connected to it by a Fibre Channel switch. The practical, hardware implementation of this architecture is outlined in***

Figure 2: IBC Demonstration Architecture.

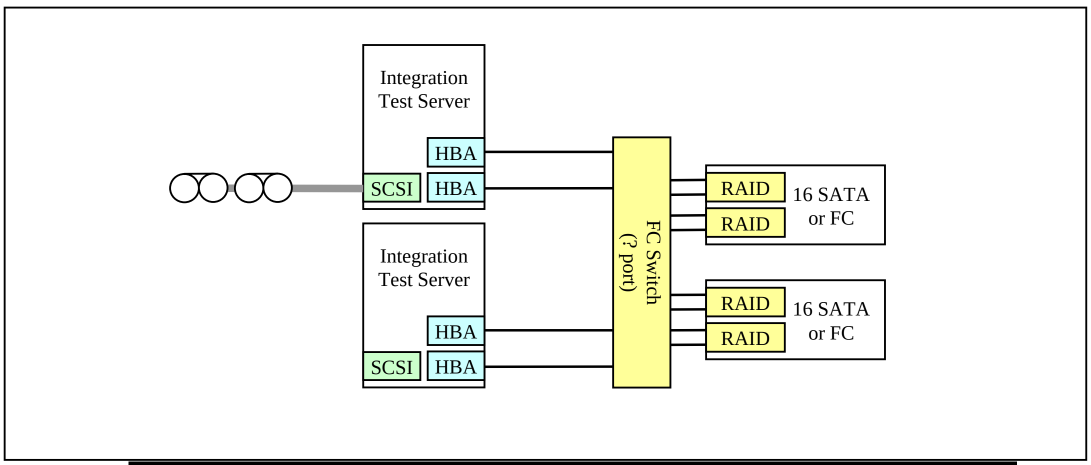


***Figure 2: IBC Demonstration Architecture***

## 2.2 Practical Demonstration

The Data Mover was incorporated within the cluster under the control of the Media Asset manager, as called for in the reference architecture and the whole system was configured to allow the live capture of High Definition (HD) video images and the play out of those same streams from the common storage simultaneously. The Data Mover, under control of the Media ASSET Manager was used to schedule and manage the movement of material between the online and near line pools, as called for in the reference architecture. The practical aspects of the demonstration architecture, as publicly demonstrated at IBC, is shown in Figure 3: IBC Demonstration Workflow.

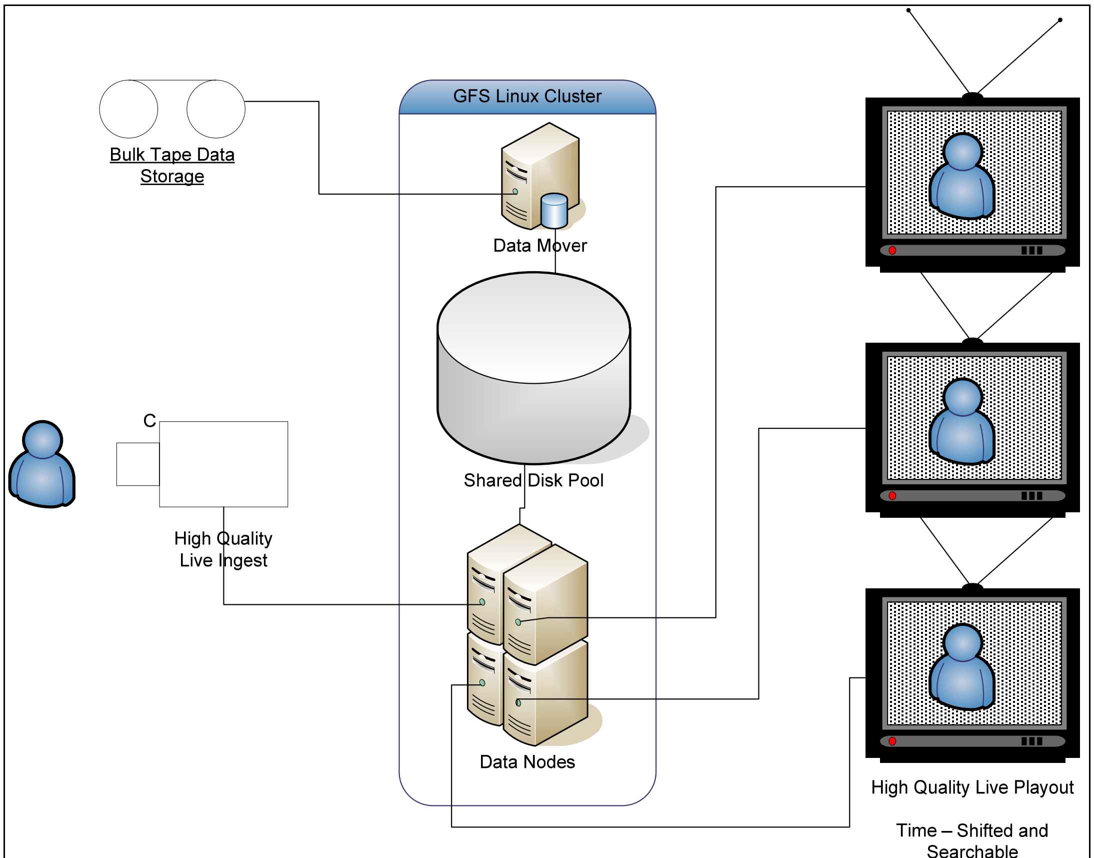


**Figure 3: IBC Demonstration Workflow**

### *2.3 Demonstration Achievements*

By using the practical implementation of the demonstration architecture at IBC, the SIVSS consortium were able to demonstrate the following;-

1. Live capture onto shared storage
2. Multiple play out from shared storage
    a. Time shifted data streams
    b. Random access into captured media streams
3. Data Mover migration to tape storage
    a. Automated movement of media data between pools
    b. Asset aware integration by using MAM interface to manage data as video assets
4. Multiple, high quality streams simultaneously
5. Practical demonstration of capability

Doing this practical demonstration generated significant interest both at IBC and around the SIVSS project as a direct and indirect result.

## 3 CONCLUSION

By this practical demonstration, the team were able to achieve the following objectives;-

1. Validate the original feasibility study from deliverable D2.1 by showing that a practical system could be constructed around the reference architecture
2. Validate both the practicality and capability of each of the component parts of the SIVSS proposed system both independently and in collaboration.

There were two parts of the system that were not available for the demonstration platform, the final data storage system and the core advanced switch. However, by taking this modular approach to the construction and implementation of the demonstration, it was possible to prove and demonstrate the capability of the proposed solution by inference and abstraction of the architecture.