

Integrated Multi-Missions Remote Operational Management System

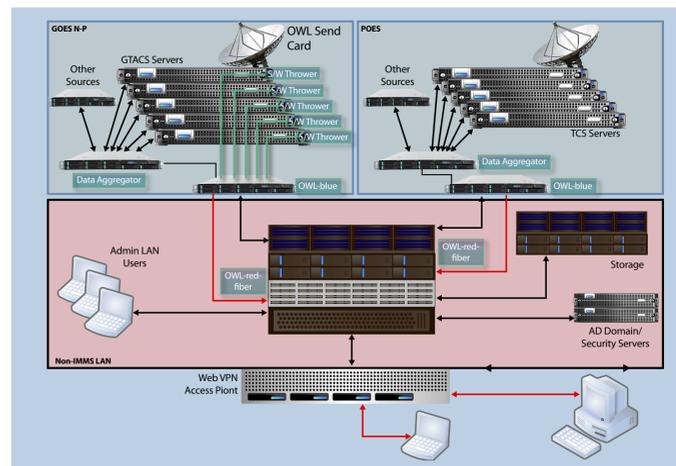
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Overview

- Make spacecraft mission telemetry, events, trends and files available for remote access to authenticated, pre-authorized users
- Preserve the self-contained environment and high security posture of each spacecraft mission by transferring data across the mission boundary via a secure, one-way transfer link
- Real-time data in a timely manner so that the mission data can be monitored for performance and troubleshooting purposes
- Agile and cost effective scalable enterprise platform for future missions

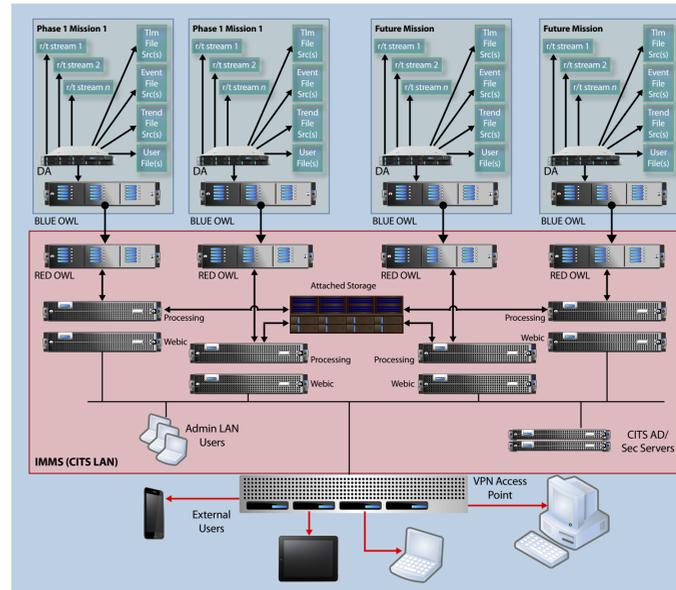
Hardware Architecture

- Each mission cell incorporates a Data Aggregation (DA) Server to collect file and real-time mission data
- The DA Server forwards the data to the IMMS CITS servers for processing and storage
- Each mission is separated from the CITS LAN via a one-way link (OWL) security device
- Data only flows out of the mission cell
- The Processing Server receives and manages incoming mission data and services data requests from Webic
- Webic Server processes and displays data and requests from the user
- All historical data stored on IMMS CITS storage hardware



Future Missions Support

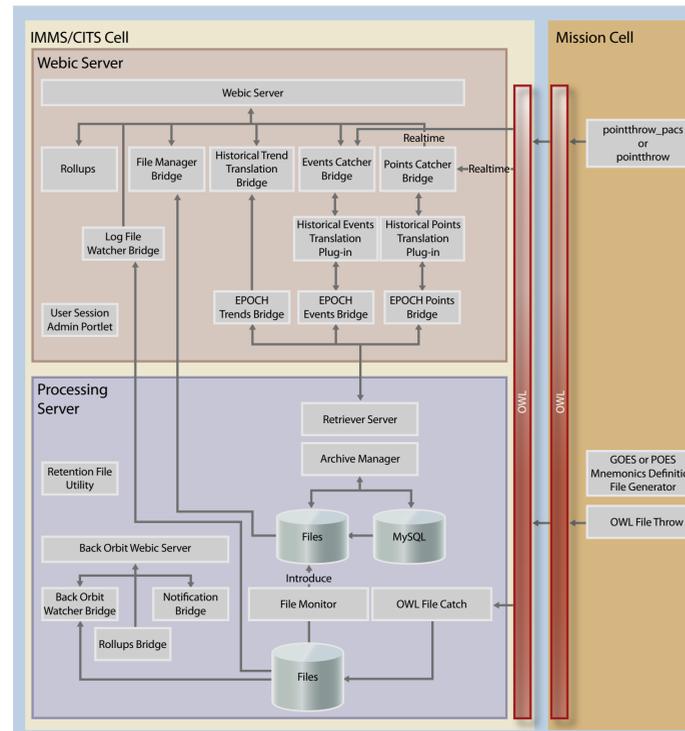
- Well-defined data interfaces allowing seamless modular expansion to missions
- Horizontal linearly scalable HP Blade Chassis and SAN hardware architecture
- VMware virtualization enabling vertical scaling of compute resource expansion
- COTS Webic software with customization only dedicated to each unique mission mnemonic and data



Objectives

- Current delivery incorporates the GOES and POES missions
- Future phases able to expand to include other missions
- POES follows general IMMS architecture
- GOES throwers reside on the GTACS servers and send real-time telemetry straight through the OWL
- Other GOES file data flows through DA
- Current IMMS CITS hardware includes blade chassis
- A blade server along with expansion blade server is dedicated for the red OWL Windows VM host and Red OWL receiving PCI cards
- All-purpose use:
 - A blade server is reserved for system management
 - Additional blade slots available to be allocated for future missions
 - 25 Webic Licenses will be allocated as 15 licenses per GOES, 10 licenses per POES unless directed otherwise
- CITS servers for each mission:
 - A blade server is dedicated for each mission Webic Server VM host and Processing Server VM host

Software Architecture



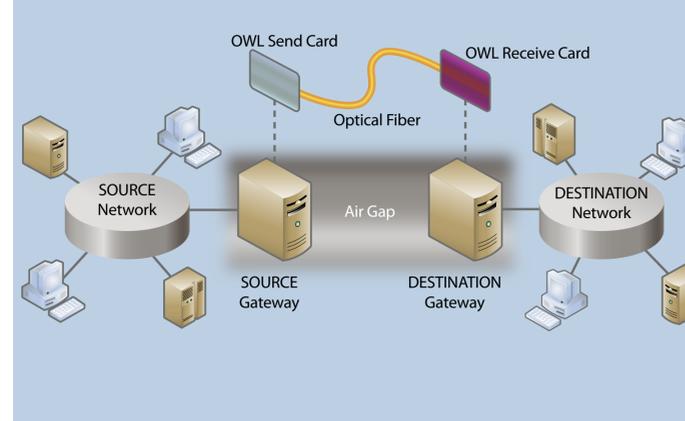
Webic:

- Webic is a web-based thin client for presenting and controlling data sources
- Webic multi-source displays can create an integrated view of the operational environment
- Provides high performance display components to support data-rich displays across multiple pages
- Leverages a drag-and-drop, in-browser page builder
- Webic assures data integrity even on high-latency connections
- Webic applications are added through the Liferay Portal, which is an enterprise web platform for building and interacting with Webic pages

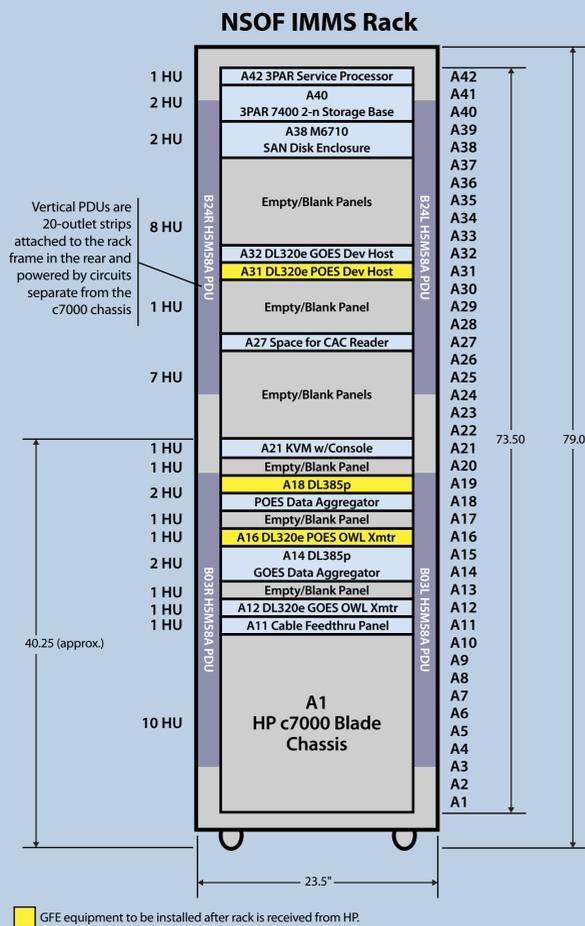
Archive Manager:

- Archive Manager (AM) is designed to manage archive files from a satellite system
- AM can automatically generate product files (DMF, EMF, TME, and RAW) to be used for analysis, in Webic, of spacecraft and ground system data
- Handles both short term (cache) and long-term (scratch) storage requirements
- AM is available on both Windows and Linux platforms

Mission Separation-OWL Overview



- Source gateway will be a stand-alone computer on mission side with the OWL send card
- Destination gateway will be a computer on CITS LAN with the OWL receive card installed in a non-virtualized blade server
- IMMS will utilize this for real-time TCP/file transfers
- OWL Secure Network Transfer System (SNTS) software does not pass IP address information across the link
- Source IP information is configured by an administrator and mapped to an OWL channel number in a table on the send-only platform
- In the receive-only platform the corresponding channel number is mapped to the destination IP address



■ GFE equipment to be installed after rack is received from HP.