ALCS -- A High-Performance High-Availability DB/DC Monitor

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Abstract

A brief history and description of the IBM product Airline Control System / Multiple Virtual Storage / Extended Architecture (ALCS/MVS/XA) and related IBM products. ALCS/MVS/XA is a high-performance high-availability data base/data communications (DB/DC) subsystem that runs under the IBM MVS/XA operating system.

Preface

This paper gives a brief history of several IBM products. These are:

- Airline Control System / Multiple Virtual Storage / Extended Architecture (ALCS/MVS/XA)
- Airline Control System / Virtual Storage Extended (ALCS/VSE)
- Control Program Simulator -- Extended (CPSIM-E)
- Transaction Processing Facility (TPF)
- Airline Control Program (ACP)

It also outlines features of ALCS/MVS/XA and ALCS/VSE that contribute to their high performance and high availability characteristics.

References to these and other IBM products, programs, or services do not imply that IBM intends to make these available in all countries in which IBM operates.
Development History

Transaction Processing Facility (TPF)

During the 1960s, IBM and some USA airlines jointly developed a passenger seat reservation system. The system ran on the IBM System/360 range of computers. It included a special-purpose system control program (SCP) and a suite of application programs. The SCP was the Airlines Control Program (ACP); the application programs were the Programmed Airlines Reservation System (PARS).

The ACP/PARS user also required an IBM System/360 Disk Operating System (DOS). DOS provided "off-line" functions such as source code library maintenance, the assembler and linkage editor, and so on. ACP and DOS each ran on its own IBM System/360 processor.

To satisfy the requirements of airlines operating internationally, IBM and some international airlines jointly developed a derivative of PARS, called International PARS (IPARS).

IBM continuously enhanced and updated ACP with a series of new releases, culminating with ACP 9.2.1 in 1979. This was the last no-charge ACP. In 1980, IBM produced a new version of the SCP called Airlines Control Program / Transaction Processing Facility (ACP/TPF), subsequently called TPF 1. As with ACP, IBM has continuously enhanced and updated TPF with new versions and releases. At the time of writing (6th August 1987) the current TPF is version 2, release 3 (TPF 2.3).

Today, many airlines both in the USA and in the rest of the world have installed ACP and TPF systems. These airlines have considerably extended and enhanced the functions of the original PARS and IPARS applications. Many of the airlines market their application programs to other airlines.

Also several non-airline companies have developed TPF-based applications to satisfy their need for high-performance high-availability transaction processing systems.

Airline Control System (ALCS)

ACP, and subsequently TPF, provide an excellent solution for the larger airlines. But many smaller airlines cannot justify installing a special-purpose SCP to support passenger reservations and related applications. One solution for this type of airline has been hosting. That is, a larger airline (the host) runs the applications under TPF. The smaller (hosted) airline accesses the system through dedicated terminals. These terminals only access the hosted airline's data base.

For a variety of reasons, airlines outside the USA often prefer an in-house seat reservation system. To address this requirement, IBM developed Control Program Simulator -- Extended (CPSIM-E). CPSIM-E was a control monitor that allowed the IPARS application programs to run under the IBM Disk Operating System / Virtual Storage (DOS/VS). This allowed an airline to run all their applications under the same SCP -- and all in the same processor if required.

In 1981, IBM shipped a new version of CPSIM-E, called Airline Control System / Virtual Storage Extended (ALCS/VSE). ALCS/VSE runs under the IBM Virtual Storage Extended / Advanced Functions operating system (VSE/AF). ALCS/VSE was designed to support the extended and enhanced applications marketed by the larger airlines as well as the original IPARS application. ALCS/VSE can also support other non-airlines applications originally developed for use with TPF.

Subsequently IBM developed a version of ALCS that runs under the IBM Multiple Virtual Storage / Extended Architecture (MVS/XA) operating system. This version is called ALCS/MVS/XA. Unlike VSE/AF, MVS/XA can exploit the largest IBM processors -- at the time of writing (6th August 1987), the IBM 3090-600E. So ALCS/MVS/XA can be suitable for companies that experience high transaction rates.

1 This is not the same as the PARS application owned by PARS Service, itself jointly owned by Trans World Airlines Inc. and Northwest Airlines Inc.