Automated Client Eligibility System (ACES) Mainframe Stabilization Project

Cross-Boundary Collaboration & Partnerships

January 2022 – December 2023

Washington State Department of Social & Health Services

Transforming lives

CONTACT:

Dan Renfroe
Deputy Director, IE&E
dan.renfroe@watech.wa.gov
360.485.1937

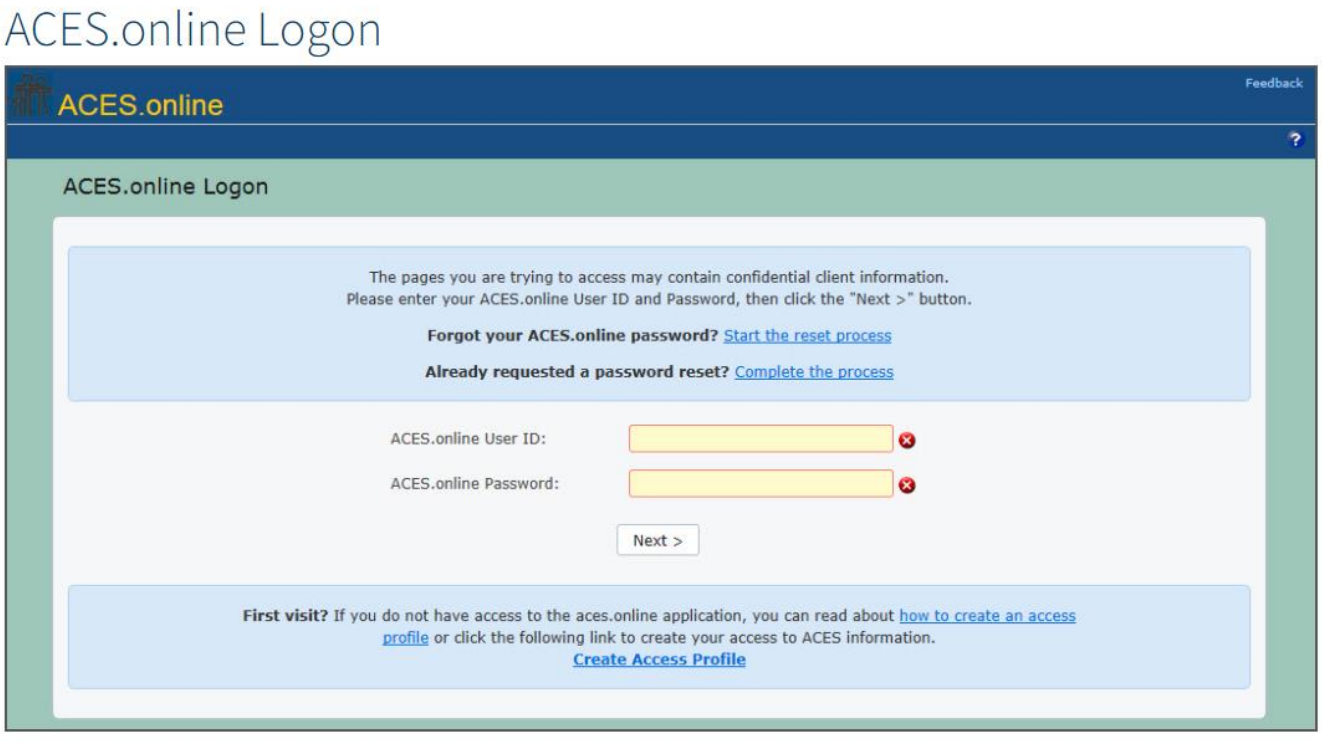
EXECUTIVE SUMMARY

The Washington State Department of Health and Human Services (DSHS) undertook the Automated Client Eligibility System (ACES) Mainframe Stabilization Project to convert the IMS Database to DB2, simplify data architecture, and enhance system stability and efficiency. This initiative aimed to address performance issues and prevent potential system failures, which could impact over 2.9 million clients relying on DSHS, Department of Children, Youth, & Families (DCYF), Health Care Authority (HCA), and Washington Health Benefit Exchange (HBE).

The project involved upgrading the mainframe processor, transitioning the ACES database from IMS to DB2, and implementing support services for an end-of-life stabilization period. These efforts were crucial for ensuring critical stability, improving performance, and preparing for future system growth.

The ACES Mainframe Stabilization Project is a key component of the broader Integrated Eligibility and Enrollment (IE&E) Modernization Program, overseen by the Washington State Health and Human Services Enterprise Coalition (HHS Coalition). This coalition includes DCYF, Department of Corrections (DOC), Department of Health (DOH), DSHS, HBE, HCA, and Washington Technology Solutions (WaTech).

Through strategic investments in software and hardware upgrades, the ACES system has been stabilized, addressing known risks, and enhancing its capacity for future needs. These improvements have extended the life of the legacy client eligibility system, ensuring it continues to serve vulnerable populations effectively.



Idea

DSHS faces significant challenges due to the complex IT environment underpinning eligibility and enrollment systems. These systems rely on legacy technologies that lack flexibility to adapt to evolving program and customer needs, leading to inefficiencies and difficulties in support. The impending "end-of-life" or "end-of-support" status for several critical systems and interfacing technologies puts eligibility, enrollment, and benefit issuance at substantial risk.

What is the Automated Client Eligibility System (ACES)?

ACES is used by the Washington State Department of Social and Health Services. ACES supports the operations of the department by integrating DSHS programs under a single, client-based, on-line system. The ACES system is a tool for determining eligibility, issuing benefits, management support, and sharing of data between agencies.

The primary concern centers on the legacy mainframe based DSHS ACES complex, which serves as the main system of record for numerous programs and a critical information source for many other systems. Although ACES has reliably supported millions of Washingtonians for over three decades, recent assessments predict a rapid approach to end-of-life for its mainframe hardware components. The U.S. Digital Response's 2020 review of DSHS's plans highlighted that, while the immediate risk of hardware failure causing ACES to go offline is low, this risk escalates significantly beyond 2025. Additionally, the ACES current Maintenance and Operations contract with IBM expired in 2023, and IBM has indicated that key mainframe hardware will no longer be supported after 2025. Despite recent upgrades to critical hardware components, such as primary data storage and backup systems, the overall end-of-life issue for the mainframe remains unresolved. The mainframe's reliance on common business-oriented language (COBOL), a programming language from 1959, further complicates matters. With approximately 12 million lines of COBOL code in use, the scarcity and high cost of COBOL programmers pose an ongoing challenge for system maintenance and development.

Stabilizing and operating ACES is crucial for ensuring the ongoing delivery of essential services to over 2.9 million vulnerable Washingtonians who rely on Medicaid and other health and human services programs. The ACES system is at significant risk of failure in the next few years due to its aging infrastructure and legacy technologies. The transition from the IMS database to a DB2 database is the final phase of the ACES Mainframe Stabilization project. This upgrade is a crucial part of the broader Integrated Eligibility and Enrollment (IE&E) Modernization Program, overseen by the Washington State Health and Human Services Enterprise Coalition (HHS Coalition) to modernize health and human services, ensuring stable and reliable support for all Washingtonians.

IE&E

What is the Integrated Eligibility and Enrollment Modernization Program?

The Integrated Eligibility and Enrollment (IE&E) Modernization Program will transform how Washingtonians access health and human services. This multi-year initiative aims to develop modern, integrated eligibility that better supports our clients and staff. The initiative will create a portal where clients can access multiple health and human services programs and streamline the application process. It will feature an eligibility status tracker, enabling easy access to application and benefits information, as well as enhanced self-service functionality.

Key risks include:

- Unsupported Hardware and Software: Several hardware and software components are already out of support or will be soon, increasing system vulnerability and the potential for failure.
- Mainframe Processor Utilization/Capacity: The mainframe processor experiences high utilization during certain periods, indicating a need for increased capacity to prevent performance bottlenecks.
- Mainframe Database Conversion: The current synchronization between IMS and DB2 databases strains processor utilization and can lead to operational errors. Converting entirely to DB2 will mitigate these issues.

Addressing these challenges will provide:

- Resolution of Stability and Performance Issues: Ensuring the system's reliability and efficiency until a new system can be implemented.
- Enhanced Performance: Improving the production environment's performance for better service delivery.
- Ongoing Software Support: Reducing system vulnerability and safeguarding data through continuous support for critical software.
- Availability of Replacement Hardware: Ensuring that replacement hardware is available to maintain operations if critical mainframe components fail.

Investing in these areas is essential to maintaining the ACES system's functionality and ensuring that Washingtonians continue to receive the support they need without disruption.

This project addresses several state and national mandates including:

- **NASCIO State CIO Top Ten Priorities** – Legacy Modernization, Cloud Services, Data, and Information Management
- **Washington State Enterprise IT Strategic Plan:**
    - **Goal #1: Create a Government Experience that Leaves No Community Behind** – Through a connected government that emphasizes service delivery and the experience of those we serve, we can achieve equitable outcomes across our communities.
    - **Goal #2** – Better Data, Better Decisions, Better Government, Better Washington – Use data and insights to improve the experience of those we serve, prioritize service improvements, drive strategic decisions, and improve transparency.
    - **Goal #3: Innovative Technology Solutions Create a Better Washington** – Prioritize solutions emphasizing access, technology, and innovation to address systemic societal challenges and align our decision-making for those we serve.

Project Implementation Summary

In addition to the technical teams within DSHS, there was involvement from the technical teams within HBE and HCA. There were also numerous business partners who became involved in the IMS to DB2 conversion, testing, and implementation efforts.

The project aimed to upgrade the disk array and virtual tape library and transition from IMS to DB2 to enhance system stability and longevity, supporting the development of modules in the IE&E program.

Project Deliverables

- Hardware and Software Upgrades: The disk array and virtual tape library were upgraded to extend the mainframe's useful life. This deliverable, covered under Contract Change Order H-024, was completed on time and within budget.
- Database Conversion (IMS to DB2): This critical and challenging deliverable involved converting the database from IMS to DB2, which proved to be more complex and time-consuming than anticipated. The conversion was successfully completed in August 2023, over a year behind schedule and beyond budget expectations.

Key Milestones and Timelines

- Hardware and System Software Upgrades: Completed in 2020 and early 2021 as planned.
- Database Conversion (IMS to DB2): Originally scheduled for February 2022, but actual implementation occurred in August 2023 due to unforeseen complexities.

Testing and Performance

- User Acceptance Testing (UAT) and Functional Testing: Completed later than planned to use in-kind resources, thus not separately tracked in the budget.
- Performance Testing: Achieving acceptable performance levels required significant additional time and expert resources from the vendor, with satisfactory performance reached in July 2023.

Budget and Costs

- Approved Budget: $7,466,820
- Actual Costs: Exceeded the budget. The hardware upgrades cost $3,460,000 as planned. Overruns primarily arose from the IMS to DB2 conversion.
- Funding: Additional funding was requested and received for Fiscal Year 2022, with no further requests beyond that year. The conversion costs were state funded without federal participation.

Risks and Issues

- Technical and Project Risks: Included specific changes needed in code modules and environment situations that impacted accuracy and performance. These risks were managed and ultimately resolved.
- Technical Issues: Addressed through weekly reviews until acceptable results were achieved, ensuring the DB2 database functioned correctly upon implementation.

Despite the delays and budget overruns, the project successfully completed the necessary upgrades and conversions, ensuring the ACES system's continued stability and support for Washingtonians.

Project Impact

The ACES Mainframe Stabilization Project successfully achieved the following goals and outcomes:

- Processor Utilization: Reduced peak ACES mainframe processor utilization by 25%.
- Software Support: Ensured that 100% of the software versions in use on the mainframe are supported.
- Program Impact: Enhanced support for Medicaid, CHIP, SNAP, TANF, and other state programs.

Project Goals

1. Hardware and Software Update: Replaced and updated unsupported mainframe hardware and software.
2. Processor Utilization and Capacity: Improved mainframe processor utilization and capacity.
3. Database Conversion: Converted the IMS database to DB2 and simplified the data architecture.

Current vs. Future State

- As-Is: ACES applications consistently reaching peak processor load, mainframe hardware and software at risk of failure.
- To-Be: ACES data migrated to the DB2 database (eliminating replication), processor and software upgraded, and spare parts available.

Risk Management

- Technical Challenges: Potential delays due to mainframe database conversion.
    - Mitigation: Engaged a qualified, experienced vendor and closely monitored by the project manager.
- Resource Challenges: Potential delays due to conflicts between Maintenance & Operations (M&O) and project work.
    - Mitigation: Assigned dedicated resources for project work and closely monitored progress.

Achieved Benefits

In addition to the project goals, the IMS to DB2 conversion yielded unanticipated benefits:

1. **Elimination of Data Replication**
    - Reduced processing time.
    - Eliminated processing errors.
    - Removed the risk of databases being out of sync.
2. **Modern Database for Future Integration**
    - Improved data quality by transitioning from flat file, indexed to relational database.
    - Provided cleaner data for future work.
    - Enabled use of DB2 database features for future development.
3. **Data Normalization**

- Accelerated processes.
- Stabilized ACES for future operations.
- Eased the path to IE&E modernization and data migration.

4. **Decommissioning IMS**
    - IMS was removed from ACES, allowing more efficient processing.
5. **Faster Delivery of Business Changes**
    - Enabled more timely release patterns using tools like GitHub.
    - Increased response time to functional defects and code fixes.

Overall, the ACES Mainframe Stabilization Project significantly reduced risks, improved processing times, and better positioned the system to support future Integrated Eligibility & Enrollment (IE&E) program efforts.

This program avoided the need to purchase a new mainframe, a cost avoidance of millions of dollars in capital expenditures, while the team made longer-term plans for mainframe supportability.

The ACES Mainframe Stabilization Project managed near-term risks to mainframe operations around hardware supportability and simplified data management practices within the mainframe environment. Long-term, Washington State is moving these operations to a managed service, which continues these stabilization efforts and ensures the health and operations of the mainframe through the life of the IE&E Roadmap.