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as 400 users guide ibm

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Welcome to the Comprehensive AS/400 Users Guide – Powered by IBM

Whether you're a seasoned system administrator, a new developer, or a business stakeholder looking to harness the power of IBM's legacy platform, this guide will walk you through everything you need to know about the AS/400, also known as IBM i. We'll cover the platform's history, core architecture, everyday management tasks, security best practices, and how to get the most out of this robust, dependable system.

By the end of this article you'll have a clear understanding of how to set up, configure, and maintain an AS/400 environment, plus practical tips for troubleshooting and optimizing performance. Let's dive in.

1. What Exactly Is the AS/400?

IBM introduced the AS/400 in 1988 as a midrange computer system that combined hardware, operating system, and database into a single, integrated package. Over the years, it evolved into the IBM iSeries and, more recently, IBM i. Despite its age, the platform remains highly relevant for mission critical workloads such as ERP, supply chain, and financial applications.

Key characteristics of the AS/400 include:

- Integrated Architecture – The operating system, database, and application environment are tightly coupled, reducing complexity.
- Reliability – Designed for 24/7 uptime, with built in redundancy and error checking.
- Security – Role based access control, object level permissions, and secure communication protocols.
- Scalability – From a single server to a cluster of machines, the AS/400 can grow with your business needs.
- Language Support – Supports RPG, COBOL, CL, Java, PHP, Python, and more.

2. Why an AS/400 Users Guide Is Essential

Because the AS/400 is a niche platform, many modern IT teams lack the specialized knowledge required to manage it effectively. A comprehensive guide helps:

- Reduce onboarding time for new administrators.
- Standardize best practices across teams.
- Prevent costly downtime by providing quick troubleshooting steps.
- Ensure compliance with industry regulations through secure configurations.
- Bridge the gap between legacy systems and modern cloud or hybrid architectures.

3. Getting Started – Hardware and Software Prerequisites

3.1. Hardware Overview

The AS/400 can run on various IBM Power Systems hardware, from entry level models like the IBM Power 9 to high end servers such as the IBM Power Systems E980. When choosing hardware, consider:

1. CPU cores – More cores improve multitasking and support higher transaction volumes.
2. Memory – Minimum 4 /GB for basic workloads; 8 /GB+ for production environments.

3. Storage – SSDs for high I/O workloads; SAS drives for cost effective bulk storage.
4. Redundancy – Dual power supplies, redundant fans, and network interfaces.

3.2. Software Stack

The core software components include:

- Operating System – IBM i (formerly OS/400, i5/OS, OS/400).
- Database – Integrated DB2 for i, which is fully transactional and supports SQL.
- Development Tools – RPG IV, COBOL, CL, Java, PHP, Python, and the IBM i Access Client Solutions (ACS).
- Management Utilities – IBM Navigator for i, IBM i Access, and various command line utilities.

Before installing, verify that the system firmware is up to date and that you have a valid IBM i license.

4. Installation and Initial Setup

4.1. Installing the Operating System

IBM provides a step by step installer that can be run from the console or via remote management tools. The process typically involves:

1. Booting from the installation media (DVD or ISO).
2. Selecting the target hard drive and partitioning scheme.
3. Choosing the desired language and locale.
4. Providing system identification information (e.g., system name, network settings).
5. Installing optional components such as the IBM i Access Client Solutions.

Once installation completes, the system will reboot into the IBM i environment.

4.2. Post Installation Configuration

After the OS is up, perform the following:

- Set the system time zone and NTP servers.
- Create a root (QTMHADMIN) user and secure the console.
- Configure network interfaces and IP addresses.
- Enable SSH for secure remote access.
- Install the latest service packs and patches.

5. User and Group Management

5.1. Creating Users

In IBM i, users are represented by QSYS users. Use the following command to create a new user:

CRTPWD USER(<username>) PASSWORD(<password>)\nExample:

CRTPWD USER(DEVOPS) PASSWORD(StrongP@ssw0rd)\n\n5.2. Assigning Roles and Permissions

IBM i uses object level permissions. The most common permissions include:

- Read (R) – Allows viewing an object.
- Write (W) – Allows modifying an object.
- Execute (X) – Allows executing a program or command.
- Delete (D) – Allows removing an object.
- Owner (O) – Full control, including changing permissions.

To grant read access to a user for a file:

CHGOBJOWN FILE(<filename>) USER(<username>) OWNGRP(<group>) CHGPRIV(READ)\n\n5.3. Managing Groups

Groups simplify permission assignment. Create a group with:

CRTGPG USERGROUP(<groupname>)\nAdd users to the group:

CHGPG USER(<username>) USERGROUP(<groupname>)\n\n6. Database Administration

6.1. Working with DB2 for i

DB2 for i is a fully integrated relational database. Key tasks include:

- Creating Tables – Use the SQL CREATE TABLE statement.
- Indexing – Improve query performance with primary or unique indexes.
- Backup and Restore – Use the SAVLIB and RTVLIB commands for logical backups.
- Monitoring – Utilize the DB2 performance monitoring tools like the DB2 Activity Monitor.

6.2. Backup Strategies

Regular backups are critical. Consider the following approach:

- Full Backup – Once a week, using SAVLIB to capture all libraries.
- Incremental Backup – Daily, capturing only changed data.
- Off Site Storage – Store backups on a separate storage system or cloud service.
- Verification – Periodically restore to a test system to ensure integrity.

7. Security Best Practices

7.1. Password Policies

Enforce strong passwords by setting the following parameters:

CHGUSRPRF USRPRF(<username>) MINLENGTH(12) MINCHARS(1) MINNUM(1) MINUPPER(1) MINLOWER(1)\n\n7.2. Two Factor Authentication

Integrate IBM i with an external authentication provider (e.g., LDAP, Active Directory) and enable two factor authentication for remote logins.

7.3. Auditing and Logging

Enable system auditing to track user activities:

CHGAUDIT LOG(<logfile>) AUDIT(*ALL)\nReview logs regularly for suspicious activity.

8. Performance Tuning

8.1. CPU and Memory Optimization

Use the IBM i Performance Analysis Tool to identify CPU hotspots. Adjust job queues and priorities accordingly.

8.2. Disk I/O Optimization

Implement the following:

- Use SSDs for critical applications.
- Enable the Disk Cache for frequently accessed data.

- Partition large libraries to spread I/O load.

8.3. SQL Query Optimization

Analyze query plans with the following command:

EXPLAIN SQL(<query>)\nReview indexes, join strategies, and data distribution to improve performance.

9. Common Troubleshooting Scenarios

9.1. System Boot Issues

Check the system logs for error messages. Use the following command to view the boot log:

DSPLOG LOG(*SYS)\n\n9.2. Application Crashes

Inspect the program's trace and error logs. Enable tracing for the specific program with:

CHGTRC OBJ(<program>) OBJTYPE(*PGM) TRC(*ON)\n\n9.3. Network Connectivity Problems

Verify IP configuration, routing tables, and firewall rules. Use the PING and TRACERT utilities to diagnose connectivity.

10. Integration with Modern Technologies

10.1. Cloud Connectivity

IBM i can connect to cloud services via VPN, Direct Connect, or API gateways. Use IBM Cloud Pak for Data to integrate analytics and AI workloads.

10.2. Containerization

Run Docker or Kubernetes workloads on IBM Power Systems using the IBM i Container Runtime. This allows legacy applications to run alongside modern services.

10.3. DevOps Practices

Adopt CI/CD pipelines using Jenkins or GitLab CI. Automate deployment of RPG or COBOL programs with scripts that invoke the CRTPGM and CHGPGM commands.

11. Resources and Community Support

- IBM Knowledge Center – Official documentation for all IBM i features.
- IBM i Community – Forums, blogs, and user groups.
- Open Source Projects – Projects like OpenIBMi provide tools for modern development on IBM i.
- Training Courses – IBM offers certifications such as IBM Certified System Administrator – IBM i.

12. Frequently Asked Questions

12.1. Can I run Linux on an AS/400?

Yes, IBM Power Systems can dual boot Linux, allowing you to run Linux side by side with IBM i. This is useful for modern web services or container workloads.

12.2. How do I migrate from AS/400 to the cloud?

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