AP ENPS

Hardware and Software Requirements

This section lists the minimum hardware and software for servers, client workstations, prompters, and virtual machines. Keep in mind the following notes about these requirements:

- You should consult ENPS Support before you purchase new hardware.
- Server requirements will vary based on the number of users at your site and other factors. You may need to add additional servers as your organization grows.
- All hardware must have the appropriate drivers.

> **NOTE:** The physical and virtual server requirements in this guide will vary based on the number of users at your site and other factors. You may also need additional servers as your organization grows. Performance and speed will be enhanced if your computer's processor, memory, and available disk space exceed the minimum requirements.

Server Requirements

Hardware Server Requirements

> **NOTE:** 32-bit servers are not supported if your site plans to implement Solr and/or SignalR.

The following table lists physical server requirements. Refer to *Virtual Server Requirements* if setting up a virtual server. These requirements apply to your ENPS Primary and Buddy Servers and the servers that will be running NOMWebService:

	Minimum Server Requirements	Recommended Server Specs
CPU	Each server must have at least **two** modern processors (within last 3 years, and has at least 4 cores). A multi-core processor does not take the place of multiple processors.	Two physical processors with more than 4 cores each.
RAM	16 GB	32 GB or more
Hard Disk Storage	Two (2) RAID arrays are required for ENPS server operations. 1st RAID array: 300GB of usable space. OS and Indexes (Solr/WSS). 2nd RAID array: 200 GB of usable space for the ENPS data drives. Common RAID configurations include RAID-5 & RAID-1. You may use SCSI or SAS hard drives This must be a hardware-based RAID; software based RAIDs are not supported.	Three (3) RAID array configurations: 1st RAID array: 100GB of usable space for the OS. 2nd RAID array: 200GB of usable space for the Indexes (Solr/WSS). 3rd RAID array: 200GB of usable space for the ENPS data drives. Common RAID configurations include RAID-5 & RAID-1. You may use SCSI or SAS hard drives. This must be a hardware-based RAID; software-based RAIDS are not supported. Solid State Drives are recommended for the OS and Index arrays. RAID-1 will provide a faster

		read time for the OS and Index arrays.
RAIDs	Two (2) RAIDs, each of which should yield a minimum of 120GB of space, including the operating system.	Three (3) RAIDs—one for the operating system, one for the Index partition, and one for the remaining ENPS partitions. For more details on recommended RAID configurations, please see the *Hard Drives* section.
Operating System	Windows Server 2008 R2, Windows Server 2012, Windows Server 2012 R2, and Windows Server 2016 (standard or data center is fine). The operating system you are using must have the latest Microsoft service packs and security patches installed for your servers. Microsoft .NET Framework 4.6.2 at a minimum must be installed.	
Wire Ingestion	If your server will be ingesting AP WebFeeds or any Social Media feeds, an Internet connection is required. A multi-port serial card such as Comtrol Rocketport or Digi Board with one port for each incoming serial port-based wire feed is required.	PCI or PCI Express connectors for the multi-port serial cards are recommended. USB connectors are **not** recommended.

Network Interface Card	10/100BASE-T minimum; the card must support TCP/IP in a Windows networking environment.	10/100/1000BASE-T recommended.
Backup System		A network-based or local backup system is strongly recommended.
Additional Software	Microsoft Internet Explorer 7.0 or later. A defragmentation tool with scheduling capabilities is required—Diskeeper Server is recommended.	A tool to provide remote access to a server such as Microsoft Windows Remote Desktop or some other 3rd party software (as preferred). Adobe IFilter 6.0 to index PDF files. This tool is available as a free download from the Adobe website. Real-time antivirus software is **not** recommended.

Software Requirements

Make sure you have the following software on your server:

- *Latest Java JDK.* Install on all ENPS 8.2 servers (unless both SOLR and the DB are not in use).

- *Microsoft SQL Server Management Objects, x86 version.* Install on all ENPS 8.2 servers and on a System Administrator's workstation.

- *Microsoft SQL Server System CLR Types, x86 version.* Install on all ENPS 8.2 servers and on a System Administrator's workstation.

Virtual Server Requirements

Keep the following requirements in mind before you install an ENPS server on a virtual machine:

- The Associated Press does not support third party software such as VMWare. You should contact the virtual machine vendor for support issues related to their software.

- You are solely responsible for meeting the virtual machine's requirements for hardware, networking, wire ingestion, and integration.

- There should be a minimum of 2 GB of RAM available to the host machine after the virtual machine is mounted.

- Make sure that anti-virus software on the host machine does not scan virtual machine files. Just like a physical ENPS server, an ENPS server in a virtual machine environment should not run anti-virus software with real-time scanning.

- Running an ENPS Primary server and its corresponding Buddy server as virtual ENPS servers on the same machine simultaneously is not an acceptable configuration.

ENPS Primary and Buddy Servers

	Minimum Server Requirements	Recommended Server Specs
CPU	Each ENPS server must have at least **two** processors with 4 cores each, for a total of 8 cores.	Two processors with more than 4 cores each.
RAM	16 GB	32 GB or more

Hard Disk Storage & RAID Setup	Two (2) Virtual Drives (.vhd files): VHD1: 300GB Windows Operating System 100GB & Indexes Solr and/or WSS 200GB. VHD2: ENPS data 200GB. This provides the option of upgrading the operating system while retaining the ENPS data.	Four (4) Virtual Drives (.vhd files): VHD1: Windows OS 100GB. VHD2: E: Solr index 100 GB. VHD3 I: WSS index for transition purposes 100 GB. VHD4: ENPS data 200GB. This provides the option of upgrading the operating system while retaining the ENPS data. Additionally it separates the indexes from the ENPS Data and each other, for maintenance purposes.
Operating System	Windows Server 2008 R2, Windows Server 2012, Windows Server 2012 R2, and Windows Server 2016. The operating system you are using must have the latest Microsoft service packs and security patches installed. Microsoft .NET Framework 4.6.2 at a minimum must be installed.	

Wire Ingestion	If your server will be ingesting AP WebFeeds or any Social Media feeds, an Internet connection is required. For serially delivered wires, you will need a virtual serial port enabled to deliver content into ENPS.	
Network Interface Card	10/100BASE-T minimum; the card must support TCP/IP in a Windows networking environment.	
Backup System	We recommend a networked backup solution to either take a regular snapshot of the server or to incrementally backup the data.	
Additional Software	Microsoft Internet Explorer 7.0 or later. A defragmentation tool with scheduling capabilities is required—Diskeeper Server is recommended.	

ENPS Mobile and Apps Servers (Physical or Virtual)
- CPU: 2x8 core
- RAM: 32 GB
- C: 120 GB
- If running as a virtual machine, all storage can be on one VHD file.

For maximum redundancy, the Mobile/Apps servers may be configured behind a load balancer.

Hard Drives

On 64-bit operating systems, a minimum of 6 hard drives (SCSI, SAS, SSD or similar enterprise-level storage devices) are required for best performance; 8 drives allow for highest availability. 3.5" platter hard drives are preferred as they have been found to provide slightly better performance compared to 2.5" drives. Sites using virtual servers should maintain the same drive configurations, swapping a virtual hard drive (VHD) for each physical RAID listed below.

Software RAID is not supported or recommended.

Best Performance Configuration for 64-bit systems – 3 RAIDS (min. 6 drives)

RAID 1	RAID 1	RAID 1 or RAID 5 or RAID 10
Operating System (C:\)	Index (E:\)	ENPS Work (F:, G:, H:\)

Normal, Acceptable Configuration for 64-bit systems – 2 RAIDS (min. 4 drives)

RAID 1		RAID 1 or RAID 5 or RAID 10
Operating System (C:\)	Index (E:\)	ENPS Work (F:, G:, H:\)

NOTE: The recommendations above mean that sites which have previously run ENPS with only C: (system) and D: (index and ENPS data) drives in the past, should change their drive configurations to include at least 3 drives—system, index and ENPS data—when building 64-bit servers for use with ENPS. For acceptable performance, the index should be on its own partition; for optimal performance it should also be on its own RAID array. Having the index and ENPS data on the same partition can slow down access to ENPS data during times of heavy indexer activity.

Client Requirements

The following table lists minimum hardware and software requirements for the client workstation:

	Minimum Client Requirements	Recommended Client Specs
CPU	Intel Pentium G2030, 3GHz minimum	Intel Core i5 or better Faster workstations are recommended for optimal plug-in usage.

Supported Operating Systems	• Windows Vista Professional • Windows 7 Professional • Windows 8/8.1 Enterprise • Windows 10 Professional or Enterprise **NOTE:** Home editions of any Windows operating system are *not* supported. The operating system must have the latest Service Packs from Microsoft installed. Microsoft .NET Framework 4.6.2 must be installed. The workstation must have a Server Client Access License and it must be a member of your site's Windows domain.	
RAM	8 GB minimum	8 GB recommended
Video Card	1024x768 is the minimum supported display resolution	Display resolution of 1366x768 or better is recommended
Hard Disk	25 GB (minimum)	80 GB or more
Browser	Microsoft Internet Explorer 7.0 or later.	The most current version of Internet Explorer is recommended.
Media Player	VLC Media Player which is available for free from http://www.videolan.org/vlc/index.html	
Network Interface	10/100BASE-T minimum. The card must support TCP/IP in a Windows	10/100/1000BASE-T recommended.

		For multimedia plug-ins optimization and configuration please consult with the vendor for their networking requirements.
Card	networking environment.	
Additional Hardware	Audio card and speakers	

ENPS Client on a Mac-based Computer

The full ENPS client application will run on a Mac when combined with the following third party applications:

- Parallels
- Fusion
- Remote Desktop
- VNC
- Boot Camp
- Windows on Apple Hardware

In these cases, support is provided for the ENPS client as it is run within the Microsoft Windows Operating System. Specific technologies required to bring the Windows Operating System and ENPS client UI to the Apple desktop are provided by third parties. Third party technologies bring with them specific feature sets. As with Windows System Administrators, Apple System Administrators should be familiar with the Apple OS as well as specific third party applications and features.

A list of recommendations can be provided on how to best configure many of these third party technologies to work with the ENPS client, but direct support is not provided for third party software.

Any Mac workstation that is to be used to host an ENPS client should not only meet the minimum specifications of the software being used to host the environment in which the ENPS client is run, but the resources allocated to that environment should meet or exceed the normal ENPS client minimum specifications.

Prompter Requirements

Refer to your prompter or captioning manual for information about the hardware requirements for your setup. You can use the following requirements as general guidelines:

- **CPU**. Pentium IV 1 GHz or faster is recommended.

- **Supported Operating Systems**. Windows XP Professional, Windows Vista Professional or Windows 7 Professional. Home editions are **not** supported. The operating system must be installed with the latest Service Pack from Microsoft. The workstation must have a Server Client Access License and it must be a member of your site's Windows domain.

- **Prompter**. It is recommended that you use +WinPlus+ as the primary or backup prompter. The +WinPlus+ prompter is an ISA/PCI hardware board with NTSC/PAL outputs. It comes with a hand controller and can be genlocked.

- **RAM**. 1 GB minimum; 2 GB or more is recommended.

- **Video Card Memory**. 128 MB minimum.

- **Hard Disk**. 2 GB.

- **Network Interface Card**. 10/100BASE-T minimum; 10/100/1000BASE-T recommended. The card must support TCP/IP in a Windows networking environment.

- **Other Hardware**. Serial (RS-232) port for optional hand controller. VGA10-to-NTSC converter such as Black Box VGA to Video Portable Pro Videoing Inc. Print-To-Video Standard Mouse and/or Trackball for controlling the prompter.