

# SYNAPSE® PACS

## Server and Workstation Requirements

Progressive design. Scalable hardware. Adaptable requisites.



**SYNAPSE®**  
Enterprise Imaging

**FUJIFILM**  
Value from Innovation

# EXTENSIBLE TECHNICAL SPECIFICATIONS TO SUPPORT ANY ENTERPRISE

Interdepartmental imaging needs continue to rise across the enterprise, placing increased pressure on the organization's IT infrastructure. Traditional PACS technologies have knowingly struggled to balance these emerging storage and security requirements with a resourceful and dynamic user experience. To overcome this hurdle, organizations need a single, technically-sound solution that can seamlessly keep pace with the evolving demands of today's sophisticated enterprise imaging environment. **Synapse® PACS is that solution.**



**Server-side image rendering technology is Fujifilm's architecture of choice for Synapse PACS.** The platform leverages broad server-side bandwidth to efficiently manage massive enterprise imaging datasets and delivers display-ready images directly to the workstation. The design also features a unified, zero-download viewer to simplify enterprise-wide workstation deployments, minimize IT support needs, and circumvent mandatory workstation updates following a PACS software upgrade on the server.

**To bring a new standard of enterprise imaging management to your organization, explore the following server and workstation specification requirements for Synapse PACS.**

# TERMINOLOGY



The following terms apply when learning about the Synapse PACS architecture:

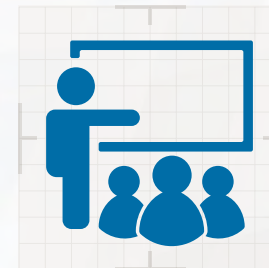
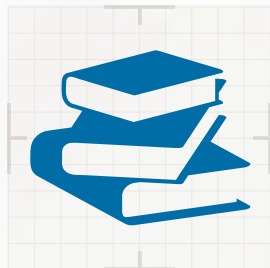
**Database (DB)** - Synapse Compute model on Oracle software provides an index of patients and study information.

**DICOM Server (DS)** - Receives, compresses, and routes new studies.

**Engine Server (ENG)** - Delivers content to authenticated users. Hosts advanced reporting services for cardiology.

**HIIS Server** - Hospital Information Interface System. Hosts advanced reporting services for cardiology.

**Storage** - Where images are stored and received from the DS.



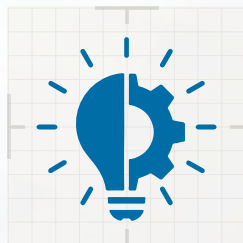
# SOLUTION TYPES AND SPECIFICATIONS



Synapse PACS offers two solution packages based on unique organizational needs.

**Fujifilm will help identify the right fit for your facility.**

	Server(s)	Minimum Network	Add-on Components
<b>Enterprise</b>	<p>Network content switch balancing to multiple Synapse servers.</p> <p>1 Database 2 Engine Servers 2 DICOM Servers 1 IIS Server Network load balancer <i>Itemized specs on next page.</i></p>	<p>Storage to Synapse = 1 Gbps CommonView (MDS) server to server = 250 Mbps</p>	<p>Engine Servers DICOM Servers SSL Server Storage</p>
<b>Simple</b>	<p>Database and Engine located on a single server.</p> <p>8 CPUs <math>\geq</math>2.3 GHz 64 GB RAM Virtual hard disks - 80 GB OS, 80 GB Synapse application, DB volume (and backup) sized to study volume as per database calculator, Page File Drive = 2X allotted memory.</p>	<p>Same as above</p>	<p>DICOM Servers SSL Server IIS Server Storage</p>



# STANDARD SERVER SPECIFICATIONS FOR ENTERPRISE SOLUTIONS



Synapse PACS has prerequisite server specifications to support a productive clinical system. The following are the **minimum** conditions designated by Fujifilm to operate a compliant Enterprise solution.

- **Database Server** (dedicated)

- ▶ 8 CPUs  $\geq$ 2.3 GHz
- ▶ 64 GB memory
- ▶ Virtual hard disks: 80 GB OS, 80 GB Synapse application, DB volume (and backup) sized to study volume as per database calculator, Page File Drive = 2X allotted memory.

- **Engine Server**

- ▶ 8 CPUs  $\geq$ 2.3 GHz
- ▶ 64 GB memory
- ▶ Virtual hard disks: 80 GB OS, 80 GB Synapse application, Page File Drive = 2X allotted memory.

- **DICOM Server**

- ▶ 2 CPUs  $\geq$ 2.3 GHz
- ▶ 16 GB memory
- ▶ Virtual hard disks: 80 GB OS, 80 GB Synapse application, Page File Drive = 2X allotted memory.

- **IIS Server**

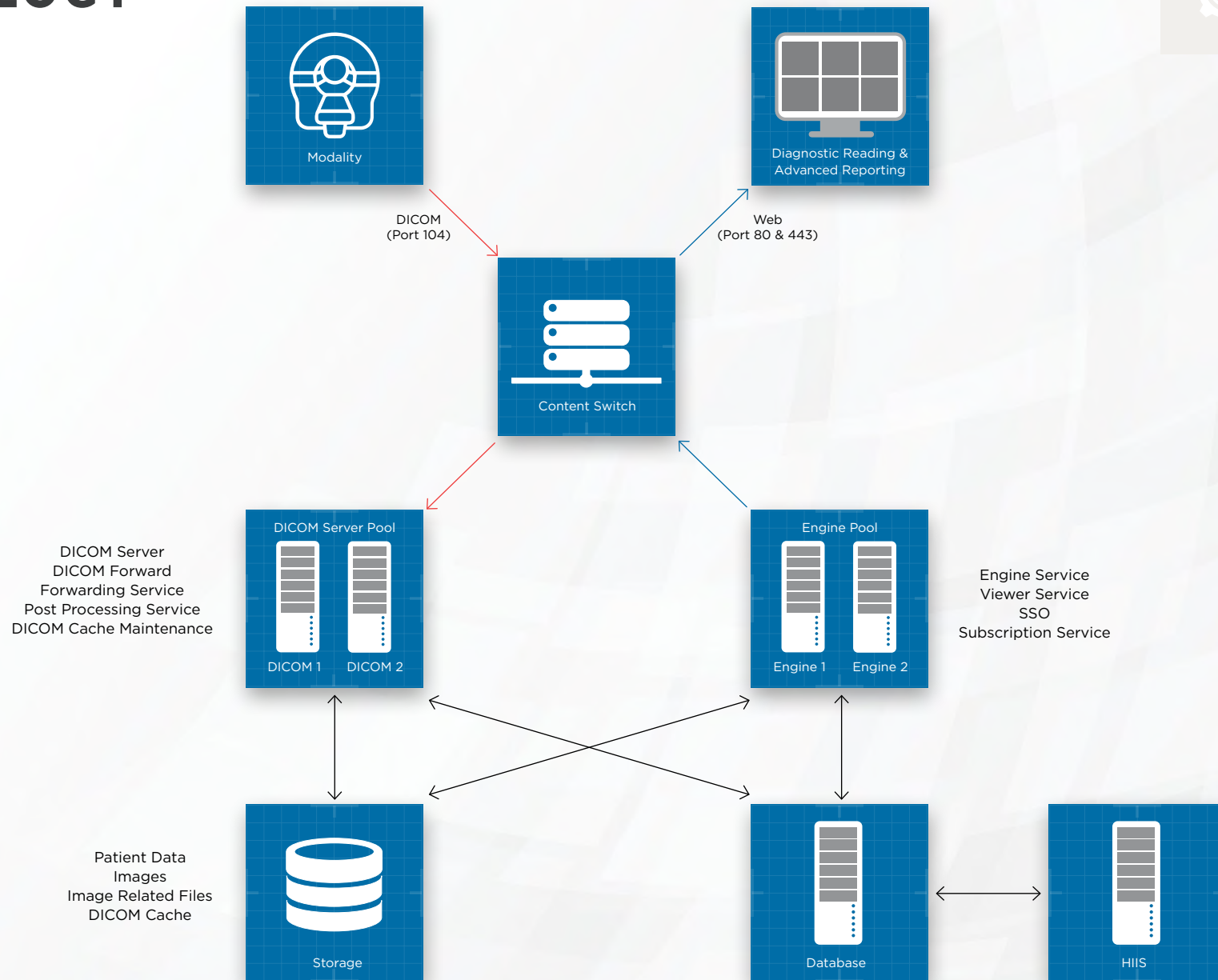
- ▶ 2 CPUs  $\geq$ 2.3 GHz
- ▶ 16 GB memory
- ▶ Virtual hard disks: 80 GB OS, 80 GB Synapse application, Page File Drive = 2X allotted memory.

- **Storage recommendations:**

- ▶ Database storage: Flash SSD RAID 5 (preferred) or 10K drives using RAID 10.
  - Above 150,000–200,000 exams per year, Flash (SSD) for database storage is highly recommended.
- ▶ VM storage: Flash SSD RAID 5 or 10K RAID 5 arrays
- ▶ Database and VMs are stored on vSphere datastores using Network File Share (NFS) mounts or block Fibre Channel (FC) LUNs.
- ▶ Image data storage: 10K drives in a RAID 6 configuration
- ▶ Images are stored on Server Message Block/Common Internet File System (SMB/CIFS) shares presented directly to DICOM/IIS VMs.



# ADVANCED ENTERPRISE TOPOLOGY



# WORKSTATION SPECIFICATIONS



Synapse PACS has prerequisite workstation specifications to support a versatile clinical system. The following are the **minimum** conditions designated by Fujifilm to operate a compliant diagnostic or nondiagnostic workstation.

## • CPU

- ▶ Diagnostic: quad-core processor
- ▶ Non-diagnostic: dual-core processor
- ▶ >5 MP Monitors: Clock speed must be >2.6 GHz

## • Memory

- ▶ Diagnostic with MG Tomo: 64 GB
- ▶ Diagnostic: 32 GB
- ▶ Non-diagnostic: 16 GB

## • Browser

- ▶ Internet Explorer 11
  - Must run in 64bit mode
- ▶ Chrome

## • Graphics options

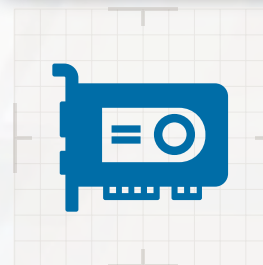
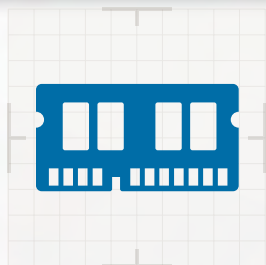
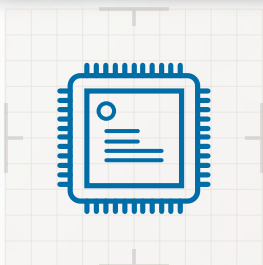
- ▶ Internet Explorer in GPU rendering setting
  - 3 MP Monitors: 2 GB or greater primary card
  - 5 MP Monitors: 4 GB or greater primary card
  - PCIe 3.0 x 16 interface

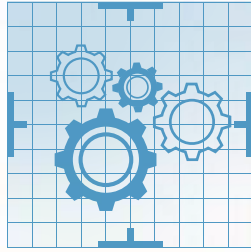
## • Network

- ▶ Client to Server Connection
  - 3 MP Monitors: 100 Mbps
  - 5 MP Monitors: 150 Mbps
  - 6 MP Monitors: 175 Mbps
  - Sub-100 Mbps should consider use of:
    - “Optimize Network Usage” setting
    - Hybrid Mode
    - Worklist Subscription
- ▶ Latency (local readings)
  - Diagnostic: Less than 10 ms to Synapse server
  - Non-diagnostic: Less than 20 ms to Synapse server

## • Storage

- ▶ Hybrid Mode or Worklist Subscription
  - Solid-state drive (SSD)





## BRING A NEW STANDARD OF ENTERPRISE IMAGING MANAGEMENT TO YOUR ORGANIZATION.

To support the entire care organization, PACS technology must evolve to function as a complete enterprise imaging system. **Institutions need a technologically-sound solution that will grow with them**; one that simultaneously supports the diverse demands of today's providers and the increasing infrastructure requirements of IT personnel.

Uniting enterprise imaging datasets through a single diagnostic viewer, **Synapse PACS advanced server-side technology** provides extensive imaging access, with standardized workflows for enhanced care coordination across service lines.

**Fujifilm's artificial intelligence (AI)-supported platform REILI®** will further augment Synapse PACS architecture by providing unprecedented AI insights directly within the workflow to enhance diagnostic accuracy and efficiency, and inspire a new tier of clinical confidence across the enterprise.

**Today's institutions need a PACS solution that can satisfy contemporary architectural demands while providing an exceptional imaging experience for those on the diagnostic frontlines. Synapse PACS is that solution.**

**SYNAPSE®**  
Enterprise Imaging

Radiology PACS | Cardiology PACS | 3D  
VNA | Enterprise Viewer | Cloud Services  
Information Systems | Artificial Intelligence

**In 1936, we launched our healthcare business with x-ray film, and we haven't stopped innovating since.**

For more than 80 years, we've continued to transform ourselves so we can help healthcare organizations like yours make the world a healthier place. As the industry advances, we'll continue adapting — finding new ways to apply our unique technologies to solve preeminent healthcare challenges.

We'll never stop iterating and developing digital solutions that progress radiography, endoscopy, ultrasound systems, healthcare IT, pharmaceuticals, and regenerative medicine — and the Synapse® Enterprise Imaging portfolio represents this commitment to continuous innovation.

To learn more about

**Synapse PACS**

technical capabilities and specification requirements, contact us today.

**FUJIFILM**  
Value from Innovation