IRON MOUNTAIN®

White paper

How will your organization safeguard its digital pathology data?

Summary

The options for storing, safeguarding, and managing digital pathology data are complex. Healthcare organizations can follow this investigation to understand various approaches, critical storage strategies, and key considerations.

Contents

How will your organization safeguard its digital pathology data?

Digital pathology is the way of the future. That much is certain. What's still uncertain for healthcare organizations is how to handle the massive storage requirements that accompany digital pathology adoption. High-resolution whole slide images (WSI) could exceed 1GB each, with labs potentially producing thousands of slides per day.

Storage strategies range from in-house to offsite cloud storage with a range of options and questions in between. Here we explore key considerations and questions to ask—both with internal teams and when vetting technologies to support your organization's digital pathology practice.

Why digital pathology

The pathology discipline's transformation from glass slides and microscopes to digital WSI has already proven to provide multiple benefits:

- Reduce cost and risk for providers, labs, and other healthcare organizations via offsite storage and cloud capabilities.
- Supplement resource shortages and enhance education, especially in research settings and in developing nations.
- Facilitate collaboration across geographic regions to leverage expertise and reach underserved populations.
- Enable timesaving workflow automation via artificial intelligence (AI) and other algorithm capabilities.

- Support rapid, high-quality AI-based pattern and anomaly recognition.

Many organizations—including the UK government, Yale New Haven Health, and Memorial Sloan Kettering Cancer Center—have already implemented digital pathology or are well on their way to robust deployments. Experts, including the World Economic Forum, expect tech innovations to help transform global health outcomes by improving data analysis, medical diagnosis, and healthcare delivery.

Approaches to image file storage

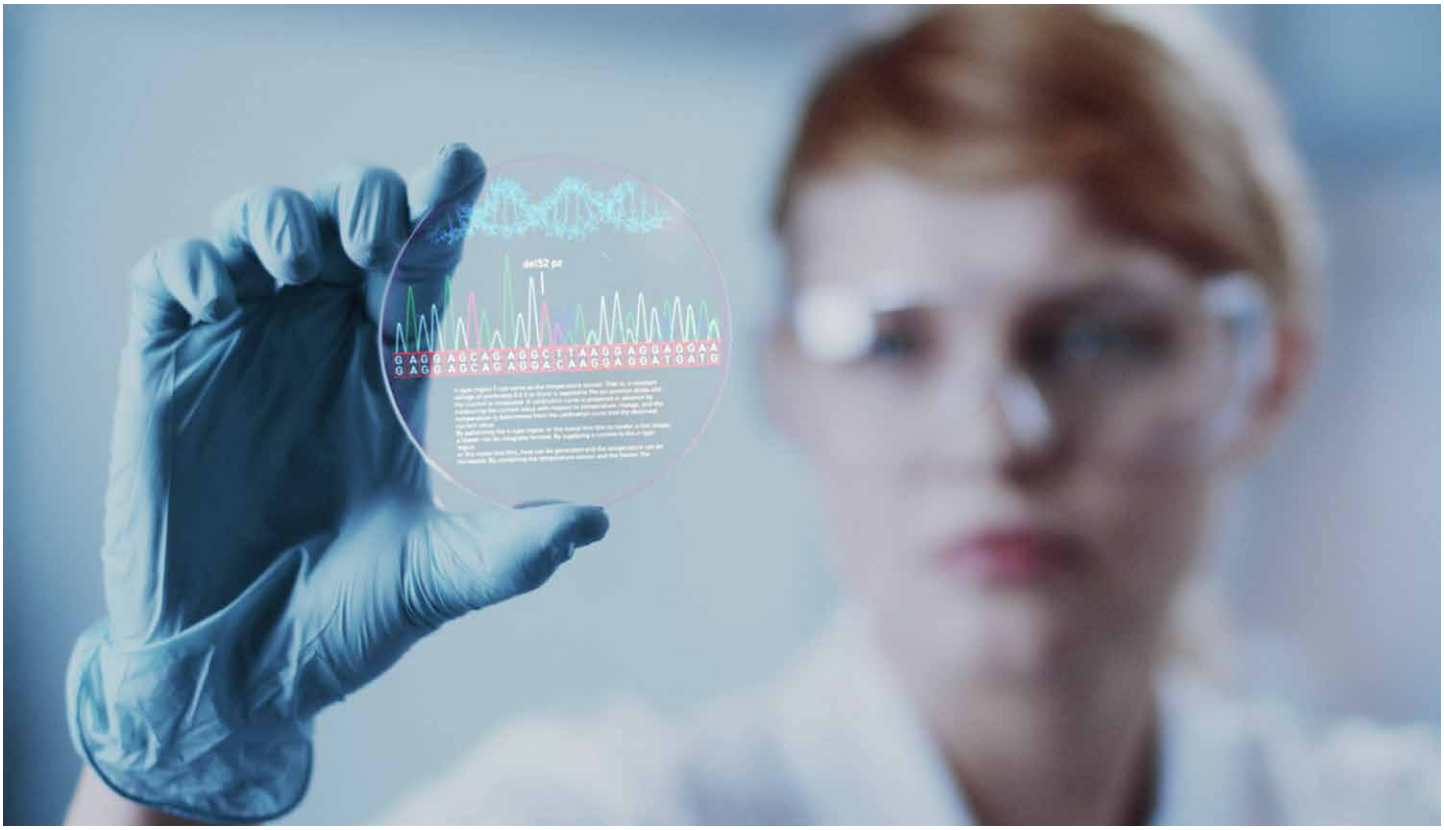
While the benefits of digital pathology are vast, so is the amount of data it creates. High-resolution image collections can easily reach the terabyte scale. As the volume of data grows, so does the need for secure and reliable storage solutions. There are pros and cons associated with each approach, as follows.

Scan and store in-house: Small-scale operations with limited scanning needs could consider this route feasible. The organization may require a single scanner to process a moderate number of slides. Image management could create challenges, though, including security vulnerabilities especially related to personal health information, a lack of redundant and offsite files, and limited scalability. The approach would consume valuable staffing resources and require capital costs as well as IT expertise. Due to the listed challenges, this would not be a viable option for moderate to large-scale operations and/or those that need to establish a cost-effective digital pathology practice in a timely manner.

Scan in-house and store on the cloud: This hybrid approach resolves many of the problems posed by a fully in-house model including the lack of redundant, secure, and offsite storage. It will place high demands on local IT, including network and infrastructure resources adding significant cost and complexity as well as require secure data connections. Many organizations are embracing the cloud for medical image storage. Yet there are security concerns related to public cloud storage. Others may balk at the hefty egress fees imposed by some cloud providers or the complex pricing structures associated with moving data among storage tiers. Though this option comes with flexibility, it should be carefully scrutinized against an organization's specific needs, budget, and security requirements.

Employ an offsite scan-and-store service: This streamlined approach involves outsourcing the entire process. That means a trusted professional will ensure redundant, secure, offsite storage, and efficient scanning plus data access management. While it answers the challenges associated with in-house or hybrid options, organizations are cautioned to select a service provider with a solid history of securely scanning, managing, and storing medical information and pathology data. The benefits of this approach include simplified operations and predictable costs without significant upfront investments, staff training, or internal scalability concerns.

Whatever approach an organization decides to take, the objective will be the same: to ensure the secure management of digital pathology assets so leadership and staff can focus on their core functions.



Key considerations and questions to ask

When researching digital pathology storage solutions, organizations must understand how a service provider measures up in terms of security, accessibility, and compliance. Here are important points to consider and questions to ask:

1. **Data security:** How is data encrypted during storage and transmission, and what encryption standards are used? What mechanisms are in place to prevent unauthorized access or data breaches? Is there an auditable chain of custody?
2. **Data availability:** What are the protocols around online access, data protection, and archiving? Are there additional fees for data access requests, egress, or ingress? How is the data lifecycle policy managed?
3. **Scalability:** Can the storage solution scale to accommodate the growing volume of digital pathology data? What is the process for adding more storage capacity as needed? How well does the solution handle large image files?
4. **Data integrity:** How is digital and physical storage maintained to ensure that images and slides remain unchanged over time?
5. **Compliance and regulations:** Does the storage solution comply with relevant healthcare data regulations such as HIPAA and GDPR? Does it include features or tools to help with compliance?
6. **Data migration and interoperability:** How will data be migrated to and from storage? Does the solution integrate with existing laboratory information systems and other systems? What file formats are supported?
7. **Cost and budget:** What are the pricing structures and ongoing costs associated with the storage solution? Are there hidden fees or charges for additional features or support?
8. **Vendor reputation:** What is the provider's track record for security and reliability? What level of customer support and technical assistance is provided?
9. **User experience:** Will the storage solution be user-friendly for clinicians and technicians? Are there mobile or remote access options?
10. **Data lifecycle management:** How is data archiving handled? Will data be securely destroyed when it's no longer needed?

By asking these questions and carefully evaluating options, healthcare organizations can determine a secure storage solution that will meet the specific needs of their digital pathology workflow now and into the future.

Finding a trusted partner

A global leader in information and asset management, Iron Mountain offers a comprehensive and scalable solution for digital pathology scanning and storage. Iron Mountain maintains 850 million patient records, more than 1 billion medical images, and more than one billion pathology slides in its secure storage. With extensive experience in healthcare and a dedication to data security and privacy, Iron Mountain is trusted by over 2,000 healthcare customers, 94 imaging centers, and the Top 10 global pharmaceutical companies.

Learn more about Iron Mountain Digital Pathology solutions or contact an Iron Mountain expert.

About Iron Mountain

For over 70 years, Iron Mountain Incorporated (NYSE: IRM) has been your strategic partner to care for your information and assets. A global leader in storage and information management services and trusted by more than 225,000 organizations around the world, including over 90% of the Fortune 1000, we protect, unlock, and extend the value of your work—whatever it is, wherever it is, however it's stored.

We create the framework necessary to bridge the gaps between paper, digital, media, and physical data and extract value along its lifecycle, helping to build your organizational resilience. And all this with a commitment to sustainability at our core.

Our relationship is a true partnership where you trust us not only to preserve institutional knowledge and enhance efficiency, security, and access but to make your work mean more. Because in that work is the power to not only accelerate your business but elevate it.

Trusted by more than 225,000 organizations around the world, and with a real estate network of more than 85 million square feet across more than 1,400 facilities in over 60 countries, Iron Mountain stores and protects billions of valued assets, including critical business information, highly sensitive data, and cultural and historical artifacts. Providing solutions that include information management, digital transformation, secure storage, secure destruction, as well as data centers, cloud services, and art storage and logistics, we help customers lower cost and risk, comply with regulations, recover from disaster, and enable a more digital way of working—and all this with a commitment to sustainability.

IRON MOUNTAIN®

800.899.IRON | ironmountain.com/pathology