

# UPMC Telepathology - Digital Pathology Imaging Group

## UPMC Pathology Video Conference Sites and usages

### Current Pathology video conference locations (on National ISDN and UPMC IP network):

- UPMC Cancer Pavilion (201 Cytology Conference room) – TANDBERG (IP)
- UPMC Shadyside (Pathology Sign-out room) – TANDBERG (ISDN and IP)
- Scaife Hall (Totten Room) - TANDBERG (ISDN and IP)
- UPMC Montifiore (Transplant Pathology Conference room) – TANDBERG (ISDN and IP)
- Magee Womens Hospital of UPMC - (Pathology Sign-out room) - TANDBERG (ISDN and IP)
- Children's Hospital of Pittsburgh of UPMC – TANDBERG (IP)
- University of Pittsburgh Department of Biomedical Informatics (DBMI) - TANDBERG (ISDN and IP)
- UPMC St. Margaret – (Dr. Jagjit Singh office) – POLYCOM PVX (IP)
- UPMC Passavant - (Donor Hall) - Polycom HDX9004 (ISDN and IP)
- UPMC Bedford Memorial - (Video Conference room) - Polycom HDX9004 (ISDN and IP)
- UPMC Horizon-Greenville - (Video Conference room) - Polycom HDX9004 (ISDN and IP)
- UPMC Horizon- Shenango - (Video Conference room) - Polycom HDX9004 (ISDN and IP)

### At this moment we have these (below) scheduled events using Tandbergs and Polycoms:

- Every Month - AP Supervisors Meeting - between SCF(Totten Room)-SHY

Lots of other unscheduled meetings between PUH-SHY-SCF-MWH that have used TANDBERG systems

**We are converting all our Sites over to Microsoft Lync and VIDYO for our video conferences at this moment.**

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## UPMC Pathology Department Conference Webcast site

<http://teleconference.upmc.edu>

### Total 2013 Visit:

Year	Total Sessions
2013	3,106

### Top 10 countries/territories (2013):

- United States – 1676
- Thailand - 369
- Venezuela - 199
- India - 123
- Egypt - 118
- Canada - 91
- Turkey- 78
- Poland - 57
- Algeria - 56
- Saudi Arabia - 39

**Total number of recorded lectures since February, 2002: ~2500**

### Types of talks:

- Seminars in Laboratory Medicine/Current Topics in Laboratory Medicine - Selected UPMC AP/CP users - Protected by UPMC network authentication
- (Selected) AP Didactic Conferences are open to public on the Internet
- CP Didactic Conference - Selected UPMC AP/CP users - Protected by UPMC network authentication

<http://telepathology.upmc.edu>

<http://dpiq.upmc.com>

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- CLS Continuing Education Session - Selected UPMC AP/CP users - Protected by UPMC network authentication
- (Selected) Departmental Seminars are open to public on the Internet
- (Selected) Diagnostic Pathology Conferences are open to public on the Internet
- All LIVE (Mondays, Tuesdays, Wednesdays, Thursdays) sessions are accessible only on UPMC network

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## UPMC Pathology Digital Slide Imaging, Remote Microscopy, Digital Imaging and Mobile Pathology Imaging and Consultation

<http://image.upmc.edu>

### Digital Slide Imaging:

- **MIRAX LIVE RT** - MIRAX DESK Enables remote users to control a motorized microscope and view in real time the camera image.
  - Current Users:**  
Dermopath
  - Current Install Sites:**  
UPMC Falk
  - Slide scanned:**
  - Space used:**
- **MIRAX DESK** - MIRAX DESK is a fast, reliable, and extremely compact turn-key slide scanner. MIRAX DESK is perfectly suitable for small laboratories and as a personal slide scanner for pathologists and researchers. MIRAX DESK is also the ideal solution for remote consultation and education.
  - Current Users:**  
Dermopath
  - Current Install Sites:**  
UPMC Shadyside Place
  - Slide scanned:**  
~50
  - Space used:**  
~10GB
- **MIRAX MIDI** - With MIRAX MIDI Carl Zeiss presents a unique solution for the analysis of histological specimen. MIRAX MIDI combines ease of use, robust automation and leading image quality. Up to 12 glass slides are scanned automatically and can be analysed conveniently on your computer screen. At the same time the complete slide image can be made available to other users via intra- or internet.
  - Current Users:**  
Cytopath, Neuropath, Histopath, Transplant Pathology
  - Current Install Sites:**  
UPMC Cancer Pavilion, UPMC Montifiore
  - Slide scanned:**  
~14,000 (Cancer Pavilion), ~6,500 (Montifiore)
  - Space used:**  
~2TB (Cancer Pavilion), ~836GB (Montifiore)
- **Aperio - CS** - Create high-quality digital slides with Aperio's five-slide ScanScope CS. ScanScope CS has a compact footprint perfect for desktop use, and comes standard with 20X and 40X scanning magnification capabilities.
  - Current Users:**  
Cytopath, Neuropath, Histopath
  - Current Install Sites:**  
UPMC Cancer Pavilion
  - Slide scanned:**
  - Space used:**  
~20TB
- **Aperio - XT** - Ultra-fast, high-capacity scanning with our powerful, 120-slide capacity ScanScope XT system for 1 x 3" slides, 20X and 40X scanning magnification capabilities.

<http://telepathology.upmc.edu>  
<http://dpig.upmc.com>

# UPMC Telepathology - Digital Pathology Imaging Group

**Current Users:**

Cytopath, Neuropath, Histopath

**Current Install Sites:**

UPMC Cancer Pavilion

**Slide scanned:**

**Space used:**

- **Aperio - T2** - A Virtual microscopy systems that deliver integrated digital slide creation, viewing, management, and analysis capabilities to pathologists. Using 200 DVD Jukebox with EMC ArchiveXtender to automatically store data on optical media with seamless access.

**Current Users:**

Cytopath, Neuropath, Histopath, GU Labs

**Current Install Sites:**

UPMC Cancer Pavilion

**Slide scanned:**

~8,764

**Space used:**

~2 TB

- **Trestle - SL50** - Allows remote, unattended access to up to 50 glass slides concurrently. This provides remote users with the ability to review multiple slides without the need for an attendant at the MedMicro device location. By automating the slide loading and unloading process, the pathologist has the flexibility to work with a large virtual catalog of slides at any time.

**Current Users:**

Dermopath, Neuropath

**Current Install Sites:**

UPMC Cancer Pavilion  
Magee-Womens Hospital of UPMC  
Children's Hospital of Pittsburgh

**Slide scanned:**

~11,477

**Space used:**

~2 TB

- **Hamamatsu – NanoZoomer** - Offers the flexibility of both brightfield and fluorescence imaging in one reliable, easy to use, robust system. Up to 210 slides are automatically scanned at 20x or 40x using a 4096 x 64 pixel CCD continuous scan technology.

**Current Users:**

Cytopath

**Current Install Sites:**

UPMC Shadyside

**Slide scanned:**

~600

**Space used:**

~240GB

- **CRI's Nuance - Multispectral Imaging System** - is a breakthrough system that converts any brightfield or fluorescent microscope into a multispectral imaging workstation. It can also be used for larger specimens, such as embryos, zebrafish, plants, or microtiter plates when mounted on a fluorescence microscope.

**Current Users:**

Cytopath, Cellular & Molecular Pathology, Breast and Gynecologic Pathology

**Current Install Sites:**

UPMC Shadyside  
UPMC Montifiore  
Magee-Womens Hospital of UPMC

**Slide scanned:**

~2,700

**Space used:**

~17GB

- **Applied Imaging Ariol SL-50** - Quantifies genetic markers and protein expression through automated image analysis, which characterizes labeled cells through color and morphometric analysis. The system features the company's Ariol software and the SL-50 slide loader, which offers the pathologist high throughput and automated slide scanning for objective and accurate quantification of stained cells.

<http://telepathology.upmc.edu>

<http://dpiq.upmc.com>

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**Current Users:**

Dermopath

**Current Install Sites:**

UPMC Shadyside

**Slide scanned:**

~166

**Space used:**

~675GB

- **OMNYX** - Diagnostc Archive Server, Work Flow Server, DB Server, along with several Pathologist Cockpit and Histology Workstations

**Current Users:**

Pathology

**Current Install Sites:**

UPMC Shadyside

UPMC Presbyterian South Tower

UPMC Montifiore

Magee-Womens Hospital of UPMC

**Slide scanned:**

**Space used:**

## Remote Microscopy:

- **VisionTeK Digital Microscope** - In an all-in-one design that combines a microscope with a digital camera and network functions into the tower unit.

**Current Users:**

Neuropath

**Current Install Sites:**

UPMC Shadyside

- **Trestle -SL4** - Microscopy product, allows multiple physicians and scientists to remotely view, navigate, and share high fidelity microscope images at sub-micron resolution over standard Internet connections in real-time. Also allows remote, unattended, high volume access to microscope images over standard Internet/LAN lines.

**Current Users:**

Dermopath, Neuropath, VA

**Current Install Sites:**

UPMC Shadyside

Children's Hospital of Pittsburgh

UPMC Presbyterian

Magee-Womens Hospital of UPMC

VA Pittsburgh Healthcare System

- **Coolscope** - In an all-in-one design that combines a microscope with a digital camera and network functions into the tower unit.

**Current Users:**

Neuropath

**Current Install Sites:**

UPMC Shadyside

- **DN100 Digital Network Camera** - Platform-independent, Internet-capable digital camera system that` can be utilized to deliver live or captured images to a local computer in the laboratory or to a remote computer anywhere in the world.

**Current Users:**

Dermopath, Neuropath

**Current Install Sites:**

UPMC Shadyside

UPMC Presbyterian

- **Olympus DP71 Netcam** - Designed for use with the Olympus DP71 cameras, and Olympus-Soft Imaging Solutions' FireWire cameras (FVII, CC12, CVII, and CVIII) and Altra 20 CMOS camera, NetCam uses TCP/IP to broadcast a live image over the Internet via an assigned static IP address.

**Current Users:**

Hematopathology, Cytology x2 (1 on wheels)

<http://telepathology.upmc.edu>

<http://dpiq.upmc.com>

# UPMC Telepathology - Digital Pathology Imaging Group

## Current Install Sites:

UPMC Shadyside  
UPMC Presbyterian

- **Nikon DS-5M-L1** - Combines a camera head (DS-5M), based on a 5-megapixel Bayer-masked color matrix CCD detector, with a camera control unit (CCU, DS-L1) that incorporates a 6.3-inch LCD monitor to display high-resolution images in progressive or interlaced mode.

## Current Users:

Dermopath

## Current Install Sites:

UPMC Presbyterian South Tower

- **QuickCam Pro 9000** - Webcam image-perfect detail and clarity. Carl Zeiss optics and autofocus keep images razor-sharp, even in extreme close-ups.

## Current Users:

Neuropath

## Current Install Sites:

UPMC Shadyside

## Digital Microscopic and Gross Imaging:

- **Nikon DS-2MV (7)** - The DS-2MV features a 2-megapixel color CCD with a high frame rate. This camera head enables the smooth display of live images and high quality still images

## Current Users:

Surgical Pathology Gross Labs, Morgue (PUH)

## Current Install Sites:

UPMC Presbyterian  
UPMC Shadyside  
Magee-Womens Hospital of UPMC  
Children's Hospital of Pittsburgh  
UPMC Mercy

- **Nikon DS-Vi1 (12)** - Features a 2.0-megapixel CCD, which balances smooth live image movement and high resolution

## Current Users:

Surgical Pathology Gross Lab, Lymph Node Grossing area

## Current Install Sites:

UPMC Presbyterian

- **Nikon DS-Fi1** - A 5-megapixel CCD captures microscopic images with resolution as high as 2560 x1920 pixels. It can be universally used for brightfield, darkfield and phase contrast.

## Current Users:

Neuropath

## Current Install Sites:

UPMC Presbyterian

- **Diagnostic Instruments (DI) Spot Digital Cameras** - This camera is widely used in the Department of Pathology for photo documentation of microscopic image files with high speed and real time viewing capability.

## Current Users:

Widespread usage in every Pathology divisions

## Current Install Sites:

UPMC Health System-wide

## Mobile Pathology Imaging and Consultation:

- **Android and iOS devices** - Smartphone adapters are easy to use for acquiring digital microscopic images. Smartphone microscope adapters (Magnifi, Skylight and Snapzoom) provide an economically-feasible method of acquiring and sharing digital pathology photomicrographs. UPMC Digital Pathology consultation Portal – <https://pathconsult.upmc.com> .

- **Free iOS app Pocket Pathologist** at <https://itunes.apple.com/us/app/upmc-pocket-pathologist/id658448753?mt=8>

## Current Users:

Cytology

## Current Install Sites:

UPMC Shadyside

<http://telepathology.upmc.edu>

<http://dpig.upmc.com>

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## UPMC Digital Pathology Imaging Group Site, Publications and Presentations

<http://dpig.upmc.com/>

### Publications:

- [Smartphone adapters for digital photomicrography](#). July 2014. Somak Roy, Liron Pantanowitz, Milon Amin, Raja R Seethala, Ahmed Ishtiaque, Samuel A Yousem, Anil V Parwani, Ioan Cucoranu, Douglas J Hartman. Department of Pathology, University of Pittsburgh Medical Center, Pittsburgh, Pennsylvania, USA
- [Pocket pathologist: A mobile application for rapid diagnostic surgical pathology consultation](#). March 2014. Douglas J Hartman<sup>1</sup>, Anil V Parwani<sup>1</sup>, Bill Cable<sup>2</sup>, Ioan C Cucoranu<sup>1</sup>, Jeff S McHugh<sup>2</sup>, Brian J Kolowitz<sup>2</sup>, Samuel A Yousem<sup>1</sup>, Vijaykumar Palat<sup>1</sup>, Anna Von Reden<sup>3</sup>, Stephen Sloka<sup>3</sup>, Gonzalo Romero Lauro<sup>2</sup>, Ishtiaque Ahmed<sup>1</sup>, Liron Pantanowitz<sup>1</sup> <sup>1</sup>Department of Pathology, University of Pittsburgh Medical Center, Pittsburgh, Pennsylvania, USA <sup>2</sup>Information Services Division, University of Pittsburgh Medical Center, Pittsburgh, Pennsylvania, USA <sup>3</sup>Technology Development Center, University of Pittsburgh Medical Center, Pittsburgh, Pennsylvania, USA
- [Experience with multimodality Telepathology at the University of Pittsburgh Medical Center](#). December 2012. Pantanowitz L1, Wiley CA, Demetris A, Lesniak A, Ahmed I, Cable W, Contis L, Parwani AV. <sup>1</sup>Department of Pathology, University of Pittsburgh Medical Center, Pittsburgh, USA.
- [Primary histologic diagnosis using automated whole slide imaging: a validation study](#). April 2006. John R Gilbertson<sup>1,5</sup>, Jonhan Ho<sup>1</sup>, Leslie Anthony<sup>2</sup>, Drazen M Jukic<sup>3,4</sup>, Yukako Yagi<sup>1</sup> and Anil V Parwani<sup>3</sup>, <sup>1</sup>Center for Pathology Informatics, University of Pittsburgh Medical Center, Pittsburgh, PA, 15232, USA, <sup>2</sup>Center for Biomedical Informatics, University of Pittsburgh, Pittsburgh, PA, 15213, USA, <sup>3</sup>Department of Pathology, University of Pittsburgh School of Medicine, UPMC Presbyterian/Shadyside, Pittsburgh, PA, 15232, USA, <sup>4</sup>Department of Dermatology, University of Pittsburgh School of Medicine, UPMC Presbyterian/Shadyside, Pittsburgh, PA, 15232, USA, <sup>5</sup>Benedum Center for Oncology Informatics, University of Pittsburgh Medical Center, Pittsburgh, PA, 15232, USA
- [Use of whole slide imaging in surgical pathology quality assurance: design and pilot validation studies](#). March 2006. Ho J, Parwani AV, Jukic DM, Yagi Y, Anthony L, Gilbertson JR.
- [Webcasting pathology department conferences in a geographically distributed medical center](#). July 2004. Yagi Y, Ahmed I, Gross W, Becich MJ, Demetris AJ, Wells A, Wiley CA, Michalopoulos GK, Yousem SA, Barnes B, Gilbertson JR.

### Presentations:

- [Applications of Telepathology and Whole-Slide Imaging in Pathology](#). October, 2008. Anil Parwani, MD, University of Pittsburgh Medical Center, Pittsburgh, PA
- [Telepathology and Whole-Slide Imaging in Pathology](#). September, 2007. Anil Parwani, MD, University of Pittsburgh Medical Center, Pittsburgh, PA
- [Whole Slide Image Based Interpretation of Immunohistochemistry Stains in Challenging Prostate Needle Biopsies](#). October 2006. Jeffrey L Fine MD<sup>1</sup> (finejl@upmc.edu) ; Jonhan Ho MD<sup>1</sup>; Yukako Yagi<sup>1</sup>; Drazen Jukic MD PhD<sup>1,2</sup>; John R Gilbertson MD<sup>3</sup>; Sheldon I. Bastacky MD<sup>2</sup>; Dana M. Grzybicki MD PhD<sup>1</sup>; Leslie Anthony<sup>1</sup>; Robb Wilson<sup>1</sup>; Anil V. Parwani MD PhD<sup>1,2</sup>; <sup>1</sup>Centers for Pathology and Oncology Informatics, University of Pittsburgh; <sup>2</sup> Department of Pathology, University of Pittsburgh Medical Center; <sup>3</sup> Department of Pathology, Case Western Reserve University School of Medicine

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- **[Evolution of Tele-neuropathology Intra-operative Consultation at an Academic Medical Center.](#)** October 2006. Jeffrey L. Fine, MD1, (finejl@upmc.edu); Craig Horbinski, M.D., Ph.D. 2, Rafael Medina-Flores, M.D. 2, Yukako Yagi1, and Clayton A. Wiley, M.D., Ph.D. 2; 1Department of Pathology, Center for Pathology Informatics, 2Division of Neuropathology, University of Pittsburgh Medical Center, Pittsburgh, PA
- **[Design and Implementation of a Clinical Whole Slide Imaging System for Diagnostic Anatomic Pathology Applications.](#)** October 2006. Jonhan Ho MD1 (hoj@upmc.edu); Jeffrey L Fine MD; Anil V. Parwani MD PhD1,2; Drazen Jukic MD PhD1,2; John R Gilbertson MD3; 1Centers for Pathology and Oncology Informatics, University of Pittsburgh; 2 Department of Pathology, University of Pittsburgh Medical Center; 3 Department of Pathology, Case Western Reserve University School of Medicine.
- **[September 2006. Poster 22. Pathology Errors Detected through Clinical-Pathologic Conferences.](#)** September 2006. Ronald Balassanian, MD, Colleen M. Vrbin, BS, Stephen S. Raab, MD, Pathology, University of Pittsburgh, School of Medicine, Pittsburgh, PA, USA.
- **[September 2006. Poster 24. Virtual Slide Tray Platform.](#)** September 2006. Sourav Ray, MD, Drazen Jukic, MD, Pathology Informatics, University of Pittsburgh, Pittsburgh, PA, USA .
- **[Poster 25. Design and Implementation of a Clinical Whole Slide Imaging System for Diagnostic Anatomic Pathology Applications.](#)** September 2006. Jonhan Ho, MD1, Drazen Jukic, MD2, Anil Parwani, MD3, Jeffrey Fine, MD1, John Gilbertson, MD4, 1Pathology Informatics, University of Pittsburgh Medical Center, Pittsburgh, PA, USA, 2Dermatology, University of Pittsburgh Medical Center, Pittsburgh, PA, USA, 3Pathology, University of Pittsburgh Medical Center, Pittsburgh, PA, USA, 4Pathology Informatics, Case Western Reserve University, Cleveland, OH, USA.
- **[Poster 27. Validation Study of Whole Slide Images for Interpretation of Immunohistochemistry Stains in Challenging Prostate Needle Biopsies.](#)** September 2006. Jeffrey L. Fine, MD1, Jonhan Ho, MD1, Yukako Yagi, None/NA1, Drazen Jukic, MD1, John R. Gilbertson, MD2, Sheldon I. Bastacky, MD3, Dana M. Grzybicki, MD1, Leslie Anthony, None/NA1, Robb Wilson, None/NA1, Anil V. Parwani, MD1, 1Center for Pathology Informatics, University of Pittsburgh Medical Center, Pittsburgh, PA, USA, 2Department of Pathology, Case Western Reserve University, Cleveland, OH, USA, 3Department of Pathology, University of Pittsburgh Medical Center, Pittsburgh, PA, USA
- **[Poster 28. Synoptic/Checklist Reporting of Radical Prostatectomy Specimens Using a Synoptic Tool: A Two Year Experience with 557 Specimens.](#)** September 2006. Anil Parwani, None/NA1, Anthony Piccoli, BA1, Susan Urda, None/NA2, Sharon Winters, None/NA2, William Gross, None/NA1, Rajiv Dhir, None/NA3, Michael Becich, None/NA1, 1Pathology Informatics, University of Pittsburgh Medical Center, Pittsburgh, PA, USA, 2Registry Information Services, University of Pittsburgh Medical Center, Pittsburgh, PA, USA, 3Pathology, University of Pittsburgh Medical Center, Pittsburgh, PA, USA
- **[Poster 29. Comparison of Virtual Slides with Traditional Glass Slides for Primary Diagnosis in Anatomic Pathology.](#)** September 2006. Anil Parwani, MD1, Ann Cecil, None/NA2, Drazen M. Jukic, MD3, 1Pathology, UPMC, Pittsburgh, PA, USA, 2N/A, Trestle Corporation, Pittsburgh, PA, USA, 3Dermatology and Pathology, UPMC, Pittsburgh, PA, USA
- **[Use of Whole Slide Imaging in Surgical Pathology Quality Assurance: Design and Pilot Validation Studies.](#)** September 2006. Jonhan Ho, MD, Anil Parwani, MD, PhD, Drazen Jukic, MD, PhD, Yukako Yagi, Leslie Anthony, MA, John Gilbertson, MD, University of Pittsburgh, School of Medicine, Department of Pathology
- **[Impact of Internet Based Resources on Resident Teaching and Educational Conferences: Experience at a University Affiliated Hospital Network Comprising Academic and Community Based Pathology Practices.](#)** September 2006. J L Fine1, Y Yagi1, A V Parwani1, M J Becich1 and J R Gilbertson1, 1Center for Pathology Informatics, University of Pittsburgh Medical Center, Pittsburgh, Pennsylvania, United States.
- **[Clinical Applications of Telepathology and Whole Slide Imaging.](#)** September 2006. Anil V Parwani, MD., PhD., Department of Pathology, Anatomic Pathology Laboratory Information Systems, UPMC Shadyside Hospital, University of Pittsburgh Medical Center, Pittsburgh, PA

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- **[Digital Imaging in Pathology](#)**. September 2006. Anil V Parwani, MD., PhD., Department of Pathology, Anatomic Pathology Laboratory Information Systems, UPMC Shadyside Hospital, University of Pittsburgh Medical Center, Pittsburgh, PA
- **[Picture Perfect: Imaging Strategies in Pathology](#)**. October 2005, Cerner Health Conference Orlando, FL. Ralph Anderson, Center for Pathology and Oncology Informatics, UPMC.
- **[The Pittsburgh Telepathology Experience](#)**. December 2005, Michael J. Becich, MD PhD - [becich@pitt.edu](mailto:becich@pitt.edu), Vice-Chairman of Pathology Informatics, Chairman of Pathology Informatics, University of Pittsburgh Medical Center - Shadyside/Hillman Cancer Center. Director, Centers for Pathology and Oncology Informatics Director, Professor of Pathology, Information Sciences & Telecommunication Professor of Pathology, University of Pittsburgh School Medicine. Centers for Pathology and Oncology Informatics
- **[Multi Spectral Imaging in Pathology Digital Stain](#)**. June 2002. Yukako Yagi. Center for Pathology Informatics. University of Pittsburgh Medical Center
- **[Mobile Devices for Anatomic Pathology](#)**. February 2002. Yukako Yagi, John Gilbertson, MD University of Pittsburgh Medical Center

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<http://dpiq.upmc.com>

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