ImageGrid™: Image Management Appliance

Price, Performance and Reliability
The paradigm shift necessary to significantly lower the cost of a fully integrated image management and workflow optimization solution has occurred. ImageGrid™ is the most feature-rich, reliable and cost-effective multi-modality image management and workflow optimization solution, providing for end-to-end support for the entire radiology workflow on a single hardware platform. ImageGrid’s industry-leading and innovative appliance architecture simplifies deployment, implementation and day-to-day workflow, particularly when contrasted with the complexities and hidden costs associated with traditional approaches to RIS and PACS. Candelis’ appliance architecture yields immediate benefits to customers through lower upfront costs and material productivity gains, all while drastically reducing ongoing direct costs associated with IT administration and maintenance contracts. Customers achieve the lowest Total Cost of Ownership (TCO) and greatest return on investment—enabling them to maximize profitability.

Web-enabled Viewing
ImageGrid™ offers several FDA 510(k) cleared web-enabled, feature-rich and cost-effective visualization options:

- ImageGrid™ Radiology Viewer provides a complete suite image processing and viewing tools and provides access to studies from anywhere on a Local Area Network (LAN) or Wide Area Network (WAN).
- ImageGrid™ Advanced Radiology Viewer provides additional features such as Hanging Protocols, Series Linking, MIP/MPR and support for up to five monitors. These additional features address key requirements for the reading of CT and MRI studies. In multi-physician environments, radiologist worklist synchronization prevents duplication of effort and improves turnaround time of studies.
- ImageGrid™ Mammography Viewer is a feature-rich web-enabled application which allows radiologists to have rapid diagnostic access to Mammography studies from their workstations. Key features of the ImageGrid™ Mammography Viewer include support
Optional seamless, automated Live Migration
- Optional FDA 510(k) Cleared web-enabled Radiology, Mammography and RT Viewers
- Optional web-enabled Referring Physician Viewer
- Optional web-enabled RIS for workflow optimization
- Optional web-enabled Mammography Tracking Module
- Optional HL7 support for integration with RIS, HIS, EHR or EMR
- Optional ASTRA integration: with ImageGrid Data Archive/Back-up Software for compliance with HIPAA requirements
- Optional Modality Worklist (MWL) and Modality Performed Procedure Step (MPPS)

ImageGrid Dashboard

Web-enabled Viewing

(continued)

for multiple concurrent users, opening of multiple (e.g., current and prior) studies side by side, automated pre-fetching of relevant priors and intelligent hanging protocols which are customizable using a sophisticated and intuitive workflow design tool.

The ImageGrid™ Advanced Radiology Viewer and Mammography Viewer can also be accessed from a single workstation. This capability enables radiologists to read all their studies from one location and from one integrated worklist. The workstation supports Dual Head 5 MP, Dual Head 2 or 3 MP and a fifth monitor for worklist.

- ImageGrid™ Radiation Oncology Review workstation (RT Review) delivers a number of sophisticated capabilities to the RO environment: support for the Planning CT (PCT) / CBCT registration (3D), DRR / Portal registration, approve/reject, soft-approve/soft-reject, RT Dose, Isodose curve, color wash, RT Struct and multiple isocenter support (abridged list).

Workflow Solutions

ImageGrid™ workflow solutions comprise a host of optional, seamlessly-integrated components which can be quickly tailored to address customer needs and facilitate operations in any environment:

- ImageGrid™ RIS, a richly-featured, web-enabled application which can serve as the linchpin of any practice, whose capabilities include patient and resource scheduling, registration, patient charts, patient history, customizable admin reports and final report delivery

- ImageGrid Reporting, a modular component which can serve either as an adjunct to Candelis’ visualization or workflow solution, and which provides for customizable templates, integrated voice recognition and voice-driven workflows

- Pre-fetch triggered by optional HL7 integration with an existing RIS, HIS or EMR, Modality Worklist (MWL) tracking, MWL hosting and even a thin MWL instantiation facility should a comprehensive RIS not be required

- A state-of-the-art Mammo Tracking facility

- Automated, secure and high-fidelity delivery of reports and key images to Referring Physicians via ASTRA (or fax), Candelis’ next-generation cloud services facility

- Provision for secure, automated visualization of study imagery by Referring Physicians via ASTRA Lite, a browser-only visualization tool
Candelis ASTRA™
ASTRA, Candelis’ next-generation cloud services provide a wide range of robust capabilities designed to complement ImageGrid™ and Candelis’ other software products. Services include:

- Backup/Restore, Archive/Retrieve and Disaster Recovery (DR)
- Seamless sharing of complete studies
- Visualization of studies via ASTRA Lite, a browser-only interface
- Automated distribution of reports and key images to Referring Physicians
- Visualization of reports and key images using ASTRA Lite or ASTRA Mobile, a freely-available app for either the iPad or iPhone
- A freely-available software client—ASTRA Plus—providing secure services for study sharing, study visualization, routing of studies over the LAN via DICOM, routing over the WAN via ASTRA and distribution of studies into patient Microsoft HealthVault accounts

Benefits of ASTRA include the elimination of CD/DVD publishing, the elimination of problematic and unsecure fax options, drastically-reduced costs for backup, archive and DR while eliminating associated administration and headaches, improved services for Referring Physicians, elimination of Referring Physician account administration.

Security was a prime consideration in the development of ASTRA services. A fundamental tenet is the absence of ‘clear’ PHI; at no time does PHI exist in an unencrypted state in ASTRA (in fact, Candelis itself does not possess the ability to decrypt customer data).
ImageGrid™ for Community / Regional Hospitals

ImageGrid™ image management and workflow optimization solutions are ideal and the most cost-effective solutions for Community / Regional Hospitals, either as a replacement RIS/PACS or a first-time implementation. ImageGrid™ provides extensive capabilities at the lowest TCO, thereby allowing hospitals to allocate more funds towards purchasing the latest modalities for better patient care. For Community / Regional Hospitals looking at implementing a second or third generation solution, ImageGrid™ often costs less than the annual maintenance contract of the existing solution.

At many Community / Regional Hospitals, radiologists require the flexibility to read on-site or via remote access. Equipped with powerful and customizable worklist tools, ImageGrid's web-enabled visualization solutions for both Radiology and Mammography improve radiologist productivity and reduce turnaround time for reading and reporting. Access to studies is optimized through automated rule-based pre-fetching of relevant priors, designed specifically to provide radiologists with all the information necessary for efficient diagnosis and reporting.

Many Community / Regional Hospitals may also rely on third-party teleradiology service providers for off-hours reading. ImageGrid's powerful and highly customizable DICOM Routing Engine allows for the automated, efficient and timely routing of studies to any number of destinations. Routing rules can be defined as broadly or as narrowly as desired to optimize workflow and can furthermore be scheduled to occur at the appropriate times.

ImageGrid's RIS functionalities provide for the automation and optimization of a hospital's radiology operations. The web-enabled application captures the entire workflow from patient registration to final report delivery. ImageGrid can be integrated with the hospital’s EMR or HIS via HL7 to further streamline operations and ensure consistency of patient records.

ImageGrid™ also provides hospitals with the ability to easily back-up their data for compliance with HIPAA. The options for automated data back-up include the automated routing of all data to an off-site ImageGrid Disaster Recovery RAID Archive or replication to ASTRA.
Multi-Location, Multi-Physician and Multi-Modality Diagnostic Imaging Centers

ImageGrid™ is the ideal and most cost-effective solution for multi-location, multi-physician and multi-modality Diagnostic Imaging Centers and clinics. Any number of modalities at any number of locations can easily send images and patient data to their respective ImageGrid storage/server system for archiving and subsequent routing (push and pull) to/from workstations on the local area network (LAN) or between different locations securely, either via ASTRA or through Virtual Private Network (VPN) connection. Radiologists have diagnostic viewing capability from anywhere via the various ImageGrid web-enabled viewers. The integrated web-enabled RIS automates the workflow between all locations and enables access to patient records and data from any of the sites. A bi-directional automated routing policy allows for two ImageGrid systems to perform back-up of all studies efficiently during off-hours to optimize bandwidth utilization between locations. In this scenario, each facility has a full-scale ImageGrid on-site and ImageGrid’s intelligent software manages the flow of data between facilities based on rules and guidelines. A fully integrated optional web-based DICOM viewer can also provide referring physicians with non-diagnostic viewing capabilities as well as access to reports for their respective patients.

Single Location Multi-Modality Diagnostic Imaging Centers and Clinics

ImageGrid™ is the ideal and most cost-effective solution for single-location, multi-modality Diagnostic Imaging Centers and clinics. Any number of modalities can easily send images to ImageGrid for archiving and subsequent routing (push and pull) to and from workstations on the network. Radiologists have diagnostic viewing capability from anywhere via the various ImageGrid web-enabled viewers. The integrated, web-enabled RIS provides for automation of the entire workflow. A fully integrated optional web-based DICOM viewer can also provide referring physicians with non-diagnostic viewing capabilities. And now, all referring physician needs—from report and key image viewing through study visualization—can be supported through ASTRA. HIPAA mandates duplicate copies of patient files including imaging studies; to support that requirement, studies can be automatically replicated to ASTRA or to a second ImageGrid deployed at a secure off-site location. In either case, the rule of law is satisfied automatically, with almost no user intervention.
### Specifications

#### Storage Capacities
- **Head Unit**
  - 2 TB Raw (0.9 TB Usable) to 24 TB Raw (16.4 TB Usable) RAID 6 configurations
- **Expansion Chassis**
  - 6 TB Raw (3.6 TB Usable) to 36 TB Raw (27.3 TB Usable) RAID 6 configurations per chassis
  - Expandable to hundreds of terabytes

#### Agency Certifications
- BSMI (Taiwan), CCC (China), CAN/CSA, CSAus, FCC (U.S.), CE Mark, C-Tick (Australia/New Zealand), ICES (Canada), MIC (Korea), SABS (South Africa), VCCI (Japan), UL 60950-1, ISO 9001

#### Chassis
- **2U Rack Mountable Head Unit**
  - 3.44” H x 17.48” W x 26.93” D (in)
  - 87.3 H x 444.0 W x 684.0 D (mm)
  - Rack Weight: 64.3 lbs (29.2 Kg) maximum configuration
- **3U Rack Mountable Expansion Units**
  - 3.43” H x 18.98” W x 23.39” D (in)
  - 87 H x 482 W x 594 D (mm)
  - Rack Weight: 62.6 lbs (28.39 Kg) maximum configuration

#### Power
- Power Rating: 100 - 240 VAC, 50 – 60 Hz (input range 90 – 264 V, 47 - 63 Hz)
- Input Current: 10A – 5A at 100 - 240 VAC, 50 - 60 Hz
- Head Wattage: 282 W input, 586.1 W maximum
- Expansion Unit Wattage: 327.9 W

#### Heat Dissipation
- Head: 1999.8 BTU/hr. (maximum configuration)
- Expansion: 1181 BTU/hr. (maximum configuration)

#### Operating Environment
- 50°F to 95°F (10°C to 35°C)
- 10% to 80% relative humidity with 78.8°F (26°C) maximum dew point (non-condensing)
- Altitude: 10,000 ft (3,050m) maximum
  - For altitudes above 3117 ft, maximum operating temperature is de-rated 1°F/547 ft