



Atlantic Health Sciences Corporation  
Corporation des sciences de la santé de l'Atlantique

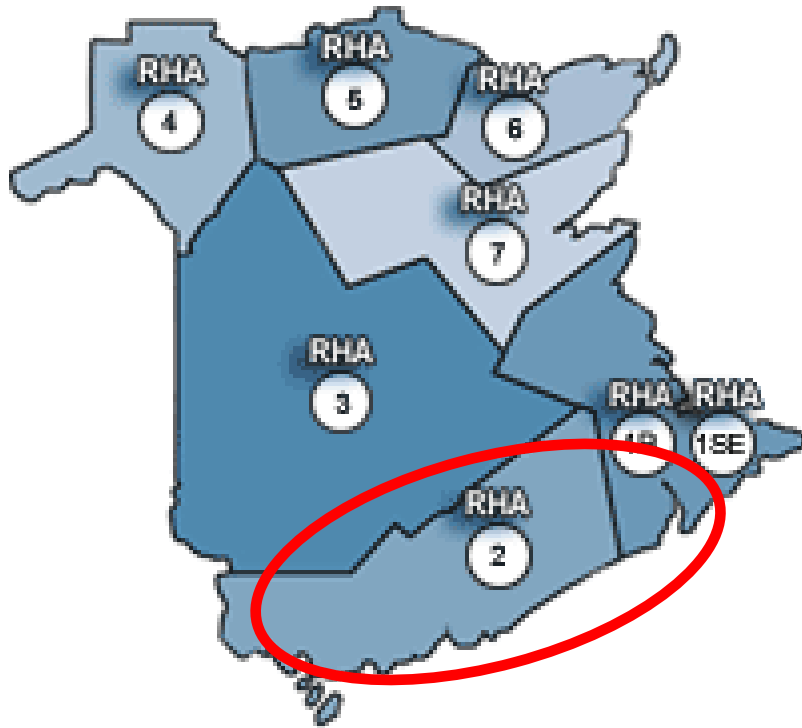


# Security and Mobility in a Healthcare Environment

Sun Rays at Atlantic Health  
Sciences Corporation



# Where is AHSC?



Atlantic Health Sciences Corporation is the largest Regional Health Authority in New Brunswick, serving a population of roughly 176,000 people, and the entire Provincial population of 650,000 for some tertiary services. AHSC's core competencies are patient care, education and research. They are affiliated with Dalhousie and Memorial Universities.



# AHSC Facilities



- The Saint John Regional Hospital is the primary referral centre in the region, and the only centre with a Trauma level 1 designation in the province.
- AHSC is composed of 13 Hospitals & Health Centers, 5 Extra-Mural clinics, 5 Public Health offices, and 5 Mental Health offices



# Proof of Concept Deployment

- Deployed 30+ Sun Rays into a Primary Care clinic environment
- Doctors had previously been using laptops and evaluating tablets with limited success.
- WiFi was troublesome due to inadequate coverage and high variations in user density



# Immediate Benefits of POC

- Doctors immediately saw value in session mobility capabilities
- Most physicians at this facility work in “pods” with two examination rooms, which they can seamlessly switch between using smart card session mobility.
- Different PC form factors had always presented problems for technical support, but Sun Rays are a single platform that works the minute they are plugged in.
- Some reported significant productivity gains, to the point that they were able to chart in downtime between patients as opposed to catching up after hours.



# Healthcare Environment Challenges

- Duty cycle of many PC's is 24 hours due to shifts in clinical areas
- Devices subjected to harsh conditions including frequent cleaning with hospital-grade disinfectants to comply with infection control guidelines.
- Existing cart-based solution is far from ideal due to power consumption and frequent battery recharge requirements.
- Large variations in user access requirements among Doctors, Nurses, IT and Admin staff



# CIS Challenges & Limitations

- AHSC moving to a new Clinical Information System (CIS)
  - Nature of software makes installation, maintenance & upgrades an intensive, manual process.
  - Changes to workflow have necessitated a mix of 32-bit and 64-bit applications
  - Application has unique location-based contextual security constraints
- Decision was made to consolidate CIS client layer to a Terminal Services environment to simplify management



# Sun Rays answer the call

- Server-side consolidation of CIS makes the environment a good fit for thin client virtualization.
- Previous generation CIS is mainframe-based green-screen application, so many users are already familiar with a terminal based solution.
- Although a healthcare environment is not as financially attractive as private enterprise from a cost savings perspective, the TCO numbers on Sun Rays are so compelling that we will still realize very significant savings.



## What do Thin Clients have to do with IDM?

- They play a very key role at the client access management layer from a security perspective
  - Kiosk vs. smart card only mode
  - Data integrity inherent in diskless / stateless architecture
- Depending on login methods and desktop virtualization technologies chosen, they (in tandem with the visualization tier) begin to implement role and application segmentation at the client device
  - Smart cards, biometrics
  - Application publishing, desktop customization, group policy

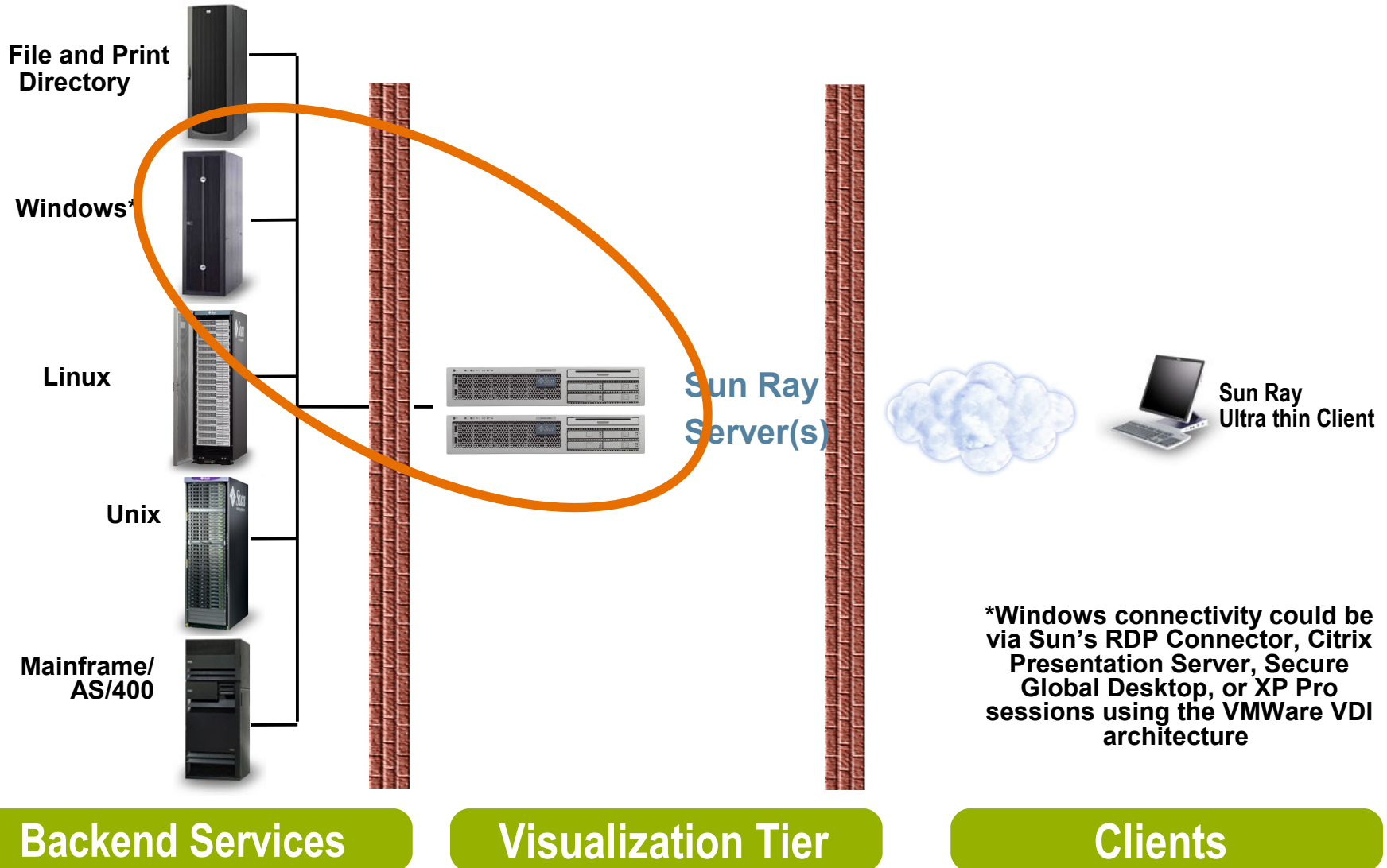


# Sun Ray Architecture

- Sun Rays are an “ultra-thin” client, with only basic firmware. No local OS, applications, or data.
- A server-based middle tier running Sun Ray Server Software (SRSS) is required to broker connectivity to various backend services/applications.
- This layer can natively connect to Windows Terminal Services via the RDP Connector, a fully compliant RDP client.
- It also allows basic load balancing and persistent maintenance of TS sessions for session mobility.



# Sun Ray is a 3-Tiered Architecture





# Secure Global Desktop (SGD)

- Sun Rays are a large part of the equation, but to take full advantage of all the server-side virtualization, something additional is required.
- SGD (formerly Tarantella) fills some of the gaps, providing the following:
  - Connectivity to many more backend platforms, from virtually all conceivable clients
  - Granular application load balancing
  - Role-based Integrated Application publishing
  - Seamless remote windowing



# Financial Benefits of Sun Rays

- Extremely rugged design and minimal hardware/software changes over time mean we will go from a 3-yr PC evergreen refresh cycle to a 7+yr replacement paradigm.
- Base cost of the sunrays is cheaper than a PC, even factoring in the required server-side architecture.
- Extremely low power consumption (~4watts) means cost savings on power. This is especially valuable in our environment, where access devices are often in use 24x7, and battery-powered mobile cart units will last longer between recharges.
- Thin client architecture means significant savings on client OS and application software licensing



# Benefits to Helpdesk/Admin staff

- Sun Ray is an appliance, with no local OS, so troubleshooting a problem is very straightforward, especially with knowledge of sunray boot protocol and codes.
- Server-side environment can be locked down much more easily, giving users all the access they require, without granting additional privileges that allow them to compromise their local system.
- Sparing program means that replacement of defective units at branch sites does not require a tech. to be onsite. Users can setup their own sunray in minutes.
- Patching and maintenance of client software is not required. Sun Rays download firmware updates from the server as they become available, which is typically only once a year or less.
- All these factors translate to a higher ratio of users to support staff.



# Benefits to end users

- Units have a very small desktop footprint, especially the all-in-one units. The all-in-one's have VESA mounting brackets, so they can be used in a variety of space-constrained environments.
- Smart cards allow session mobility, meaning that users can move from one sunray to another and resume their session where they left off (subject to application timeouts) simply by inserting their smart card and typing their password.
- Depending on the choice of access tier, the desktop can be simplified to include only icons for which the user requires access, reducing clutter and removing the need for the user to understand the local OS.



# Security Benefits

- Smart cards serve as a second factor on which to authenticate, improving security.
- No local data storage and no capability without a supporting server-side infrastructure makes them undesirable for theft.
- Local USB ports can be limited in capability to prevent USB thumbdrives or similar devices from being used to offload data from the network.
- ALP, the network protocol used to communicate between Sun Ray and server can be encrypted, and essentially transmits user input and screen updates, so is of limited value to somebody sniffing the network.



# Our Configuration

- Sun 4150 servers in N+1 configuration Failover Group
- Designed to accommodate 100 concurrent users per server as configured
- Horizontal scaling possible by increasing number of servers, vertical scaling to at least 150 users (est'd) by increasing memory.
- We are still determining the exact desktop configuration, which will likely utilize SGD and a combination of webtop and direct Terminal Services.
- Multiple MS Terminal Server farms serving up applications, some 32-bit and some 64-bit as applications allow.
- All development, test and reporting environments on VMWare for further cost savings and flexibility.



# Sun pre- and post-sales support

- Our local account rep and technical contact have been invaluable in getting this initiative operational. They supported the POC deployment even when an explicit support contract was not in place.
- They have been very pro-active in bringing Sun SME's to visit with us to brainstorm on all facets of the design.
- They put together a comprehensive, very competitive RFP response to address our thin client needs, and have so far met all expectations.
- Follow-on business in Identity Mgmt software (password sync, user provisioning, etc.) is a possibility.



# Best Practices / Lessons Learned

- ALP uses UDP as the transport mechanism. The network should be stable with low packet loss and latency, otherwise screen paints can be adversely affected (snow, flickering, etc.)
- Network MTU settings may need to be tweaked to prevent packet fragmentation and optimize performance.
- Most processes in the SRSS are driven by shell scripts (bsh/ksh). Good scripting skills = more opportunities for customization.
- These things pretty much run themselves – in our POC environment, outside of one bad memory stick on the server side, and some MTU issues over our WAN, we have experienced zero issues. 30+ sunrays for 1.5 yrs, still all operational with no maintenance or intervention.



# Sun Ray Wish List

- Sun Rays are an excellent thin client architecture with few issues. A few additional features we'd like to see:
  - Native wireless capability (in a Sun version of the device)
  - Larger flat panel all-in-one version (e.g., 21")
  - Support for a few more client device protocols (TWAIN in particular for scanners, etc.)



# What's Old is New...

- Sun has been saying “The Network is the Computer” since 1982...advances in
  - Application and operating system virtualization technology (VMWare, SGD, Citrix, etc.)
  - Storage virtualization technology (SAN, NAS, etc.)
  - Hardware virtualization technology (Multiple core CPU's, blades, etc.)have finally made this concept a reality, and Sun Rays can play a big part in the equation.
- We've come full circle, from terminals & mainframes, to powerful desktops, back to server-centric computing with server farms and thin clients.



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# Questions?