# EXECUTIVE SUMMARY

Southwest District Health was created by the Idaho Legislature in 1970. The mission of the Health District is to promote and protect the health of people and their environment in Adams, Canyon, Gem, Owyhee, Payette, and Washington Counties.

Health District revenue is received from several sources: approximately 21% from the State General Fund; 15% from county contributions; 44% in Federal and State contract awards; 17% in fee collections; and 3% from client donations and other sources. We work hard to use these funds judiciously as demands for public health services rise dramatically when the economy is in a declining trend.

Recognizing an opportunity for cost containment, in September 2006, our IT Resource Manager, Jim Williams, presented the benefits of virtualization and terminal services to senior management with a plan to implement this technology in fiscal year 2007 to meet growing demands on services. Virtualization made it possible for the District to migrate and run existing multiple operating systems and applications on fewer servers while increasing the utilization and flexibility of existing hardware. Using virtual memory and terminal services technology, the IT staff was able to postpone the purchase of servers and personal computers planned for the hosting of additional public health programs, increased growth in service requirements, and the replacement of equipment well past recommended life cycle. Through virtualization, the District was able to obtain a five to one; virtual machine (VM) to physical server; consolidation savings on aging servers without impacting performance or service. Additional benefits included reduced server room sprawl, less hardware administration, and reduction of server room space and environmental requirements. By deploying Terminal Services, Virtual Console, High Availability, Distributed Resource Services and other VM products, coupled with the placement of operating systems and agency data on centralized storage devices, our IT staff was able to service, move, or recover individual or entire server hosts without service interruption. The District's Continuity of Operations Plan (COOP) benefited from both the implementation of Virtualization and Terminal Services by simplifying recovery procedures and enabling severs to be re-provisioned in new locations very quickly.

The deployment of virtualization and terminal services has saved the agency $158,400 in operating costs and continues to position our Information Services to be able to adapt to future agency service requirements and technologies in a responsible manner.

**Southwest District Health Nomination Narrative**

With public health employees working in six separate clinic facilities, spread throughout Southwestern Idaho, imposes a considerable challenge for the deployment of information technology resources. Fixing corrupted operating systems and applications, updating programs, installing patches, applying security controls, creating user profiles and desktops on over 100 computer work stations was labor intensive. Additionally, providing services from offices with different data circuit types often resulted in slow response times as public health clinical and environmental database records were being pushed back and forth across a mixture of network connections and bandwidths. Addressing these issues, our IT section deployed Terminal Services throughout the agency in calendar year 2005 as an alternative to purchasing costly personal computer hosting systems or management software. By centrally hosting programs, this enabled staff to access programs and data resources from any computer resource in the agency having a Remote Desktop Protocol (RDP) connection. By sending only keystrokes, mouse movements, and screen data over the network through the use of Terminal Services, computer response time and bandwidth limitations were resolved. This enabled the agency to postpone expensive circuit and network equipment upgrades. Other efficiency and cost savings were realized, which included: centralized management and standardization of desktop hosting; reduction of help desk calls; single point of application and operating system deployment and update/patch management; increased return on investment through extending personal computer equipment life cycle; increased personal computer up time productivity; improved user satisfaction; greater security management and standardization enforcement; better flexibility to respond to public health emergencies and faster deployment of recovery services in disaster recovery events.

The following information is not intended to recommend or push any particular technology or solutions, but rather a look at how Southwest District Health implemented technology to reduce hardware costs, improve utilization of existing computer inventory, and increase operational efficiencies of providing information services in a public health organization. Indirect costs savings from these two projects were not reflected in the $158,400 cost saving figure reported in the executive summary.

a)      Description of project (s), including length of time in operation:

Virtualization –
In 2006 with growing public health services and server hosting demands, Southwest District Health implemented a server consolidation project along with centralized storage to more efficiently utilize existing servers, improve performance, service reliability, and postpone replacement of servers nearing end of their life cycle. The initial project took one month to complete.

Terminal Services –
Beginning in 2004, with a few selected satellite groups, the agency started the Terminal Services project deploying the topology of remote desktop connection (RDP) with Terminal Services. By 2005 Terminal Services was rolled out at an enterprise level.

b) Significance to the improvement of the operation of government:

Virtualization and Terminal Services applications provide significant cost savings to the taxpayer as well as dramatic efficiency improvements to available information technology resources in the Health District.

Virtualization Project:

Virtualization is a key technology in personal computer and server infrastructure optimization and has been deployed by the agency to rapidly deploy information and services across the infrastructure at any time. As demand for public health services increase, the assets we managing increase. The need to provide capacity on demand while reducing operating costs in government is a responsibility our IT staff has met successfully.

Terminal Services Project:

Southwest District Health staff accesses and updates data from a variety of sources. These include data sources to our internal environmental and clinical health databases, financial and administrative records; to external state and governmental resources and other contracted services. Prior to the deployment of Terminal Services, staff in some rural locations often had less than optimal response times connecting to agency's public health databases. This was primarily due to limited data circuit offerings in these communities or cost prohibitive for offices of their size. As database records were being pushed back and forth between the server and the client personal computer, it was apparent that offices outside of Caldwell local area network needed an affordable solution for efficient utilization over limited bandwidths. By 2005, 69% of our active personal computer inventory, purchased between 2001 and 2002, were already past the end of their life cycle and had inadequate computer processing unit, random access memory, disk space and operating systems needed to efficiently run the District's public health service applications. Microsoft Terminal Services was deployed as a low cost, but very effective client desktop solution.

c) Benefits realized by service recipients, taxpayers, agency, or state:

Virtualization Consolidation Project Benefits:

Southwest District Health, like many other organizations with a growing base of servers, implemented virtualization for cost containment, increased server utilization of hardware and existing inventory, reduced hardware platform dependancies, faster server provisioning, resource pooling, centralized management, and faster recovery capabilities.

Cost Savings - Virtualization technology allowed our District to partition a physical server into multiple virtual environments and enabled us to consolidate our physical servers into a pool of virtual server resources. Servers dedicated to a single application typically used only ten percent of computing capacity. By virtualizing several applications and their hosts onto fewer physical servers we were able to boost utilization of server resouces to 60-70%.  This enabled Southwest District Health to reduce the number of servers needed to support agency services and postone for two years the purchase of servers at the end of their life cycle.  By separating the software from the physical box we are not bound to a specific piece of hardware or operating system.   Linux and Windows operating systems can reside on the same hardware.   Additional cost benefits included reduced server room sprawl, less hardware for staff to administer, and reduction of server room space and environmental requirements.

Operational Improvements – The IT staff utilizing other features of virtualization including Virtual Console (VC), High Availability (HA) and Distributed Resource Services (DRS) along with centralized storage enabled entire server hosts to be moved or recovered without service interruption. Server provisioning which used to take a few hours to setup and configure now can be done through simple template imaging in minutes. Virtualization ensures that mission-critical applications, services, and data are always available and disaster recovery activities simplified bringing servers back online in new locations within a few hours instead of days.

By employing virtualization technology the agency was able to eliminate the replacement of 8 servers with an approximate cost savings of $64,000.

Terminal Services Project Benefits:

Reliability and Productivity - With computer programs residing on the server under the control of Terminal Services, our staff can not accidentally delete critical operating system or program files causing programs to hang or terminate.  Services are not interrupted due to corrupt data of program files.  By utilizing thin client architecture as our standard desktop we significantly reduced the number of help desk calls.   Prior to the use of Terminal Services, the IT staff averaged 1,195 help desk calls for assistance, representing 2,276 man-hours per year in fixing problems.  Current yearly average is 439 help desk calls totaling 495 man-hours to fix problems.   This improvement is allowing the IT staff to work more in service driven needs and increased

productivity to the end user.    Staff can use any personal computer in the organization to logon and get their desktop screen, icons and programs. Terminal Services (Thin Client) allows users to be mobile and if needed able to work from outside our facilities.

Better Control of Applications – Since applications are installed on centralized servers we are able to change, update or deploy new service programs much more rapidly throughout the organization in response to changing needs. Disaster recovery is simplified and not dependent on district-owned inventory. The ability to have our public health software and data back up working and online at all times is crucial for the District's ability to respond to natural disastesr, man-made, or pandemic events.

Cost Savings - Hardware has a longer life expectancy.    Under a Terminal Services environment programs and data are executed on the server's resources (CPU, RAM and disk drives) instead of the staff's PC.    Older generations of computers can still be redeployed and meet service need requirements.  Basic terminal hardware and thin clients can be used in place of complete desktop systems, helping lower costs to purchase, manage, maintain and extend the computer inventory life.

Reduced Administrative Management - IT management costs are reduced by only having to manage a single copy of the applications and desktop profiles that reside on the server.  Access to centrally managed Windows programs using a simple remote desktop protocol connection and enabling remote access for existing "Wide Area Network (WAN)-unfriendly" applications.


Reduced Bandwidth Requirements - Terminal Server creates client sessions in which applications present their user interfaces remotely.  Processing happens on the server while graphics, keyboard, mouse, and other end-user input/output (I/O) are handled at the end-user device.  Bandwidth is used more effectively, greatly improving performance and reducing response time lags in a "FAT" client environment

Less Vulnerable to Viruses – under a Thin Client environment, the staff can run programs and access data from the server making our agency less vulnerable to viruses, malware, and other spyware attacks and improve security controls over hardware and software.

Centralized data and reliable backups - All software, data and client desktop screens are stored centrally and backed up daily.  Client personal computers are not dependent on locally accessed software or data.

Terminal Service works with most standard Windows applications without incurring costly alternative hosting solutions.

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Deployment of terminal services saved the agency approximately $80,000 in personal computer replacements by reducing client personal computer requirements and extending the life span of existing computers. Better utilization of the existing network bandwidth allowed the agency to delay costly network upgrades which saved approximately $14,400 during the time frame being reported.


Southwest District Health's IT section has worked intelligently to deploy best products, solutions and practices while being fiscally responsible to the citizens of the counties we serve. I proudly nominate them for this achievement award.


//signed, 4/21/08//
Eugene G. Gunderson
Director