Information Systems Strategies

A. IS GOAL AND STRATEGIES

Lummi Nation Information Systems (IS) has developed the following IS goal and strategies in support of the Lummi Nations mission, goals, and objectives.

Information Technology Goal

To provide accurate information on a reliable, timely, and cost effective basis to Administrative management and staff in support of their activities and the Lummi Nation's mission and to external entities as requested and appropriate.

IT Strategies

Service Delivery

1. Use information technology to enhance or eliminate processes within and among programs and thereby optimize service delivery.
2. Use information engineering methods and tools to implement more efficient and effective IS solutions.
3. Develop and implement strategic plans for emerging technologies to link technology initiatives to business opportunities. Examples include GIS, imaging, groupware, multimedia, and office equipment networking.
4. Provide decision-makers at all levels within the organization with efficient and effective access to information and decision-support tools.

Information Accessibility

5. Establish and maintain a communications network to facilitate data sharing and integration within and among agency programs.
6. Develop and implement an agency data architecture that allows data to be readily accessed and shared by agency staff and others.
7. Develop and implement a seamless, integrated desktop environment.
8. Develop and implement technologies that enable Tribal Members to conveniently access Lummi Nation government information from homes, businesses, libraries, and other locations to increase government responsiveness and public satisfaction.
9. Continue to support projects, which provide portability, scalability, and interoperability.
10. Establish electronic data interchange (EDI) policy, procedures, and standards to facilitate the sharing of data among government, industry, and the public.

11. Protect personal privacy and data integrity through the implementation of security practices that prevent the disclosure of information that might violate personal privacy or jeopardize Lummi Nation interests defined in law.
12. Prepare and test a business resumption plan to ensure the rapid restoration of essential services in the event of any emergency.
13. Encourage the use of telecommunications to improve the quality of public service and increase staff productivity and effectiveness.

Responsiveness to Changing Business Requirements

14. Promote strategic alliances with other agencies, academia, and industry in order to exchange Information Technology (IT) solutions and improve service to common users.
15. Encourage innovation with pilot or demonstration projects that test new solutions.
16. Explore the potential associated with privatizing and outsourcing information services.
17. Develop a coordinated research, assessment, and planning process to investigate and apply emerging technologies.

Investment in People, Methods, and Partnerships

18. Effectively train IS staff.
19. Provide training programs for all levels of non-IS staff so that the broad implications of information technology are understood.
20. Provide incentives that attract and retain highly qualified personnel involved in mission-critical technology systems.
21. Create partnerships among IS and divisions/offices to support efficient and effective acquisition, development, implementation, and maintenance of information technology.

Campus Cyber Infrastructure (CI) Plan

Campus-wide strategy and approach to CI

Northwest Indian College (NWIC) Information Technology Services will provide appropriate IT infrastructure and services to different researchers based on their needs by supporting transformative uses of Technology for teaching, learning and research, and to further communication and goals and enhance NWIC business processes for all members of the NWIC educational community.

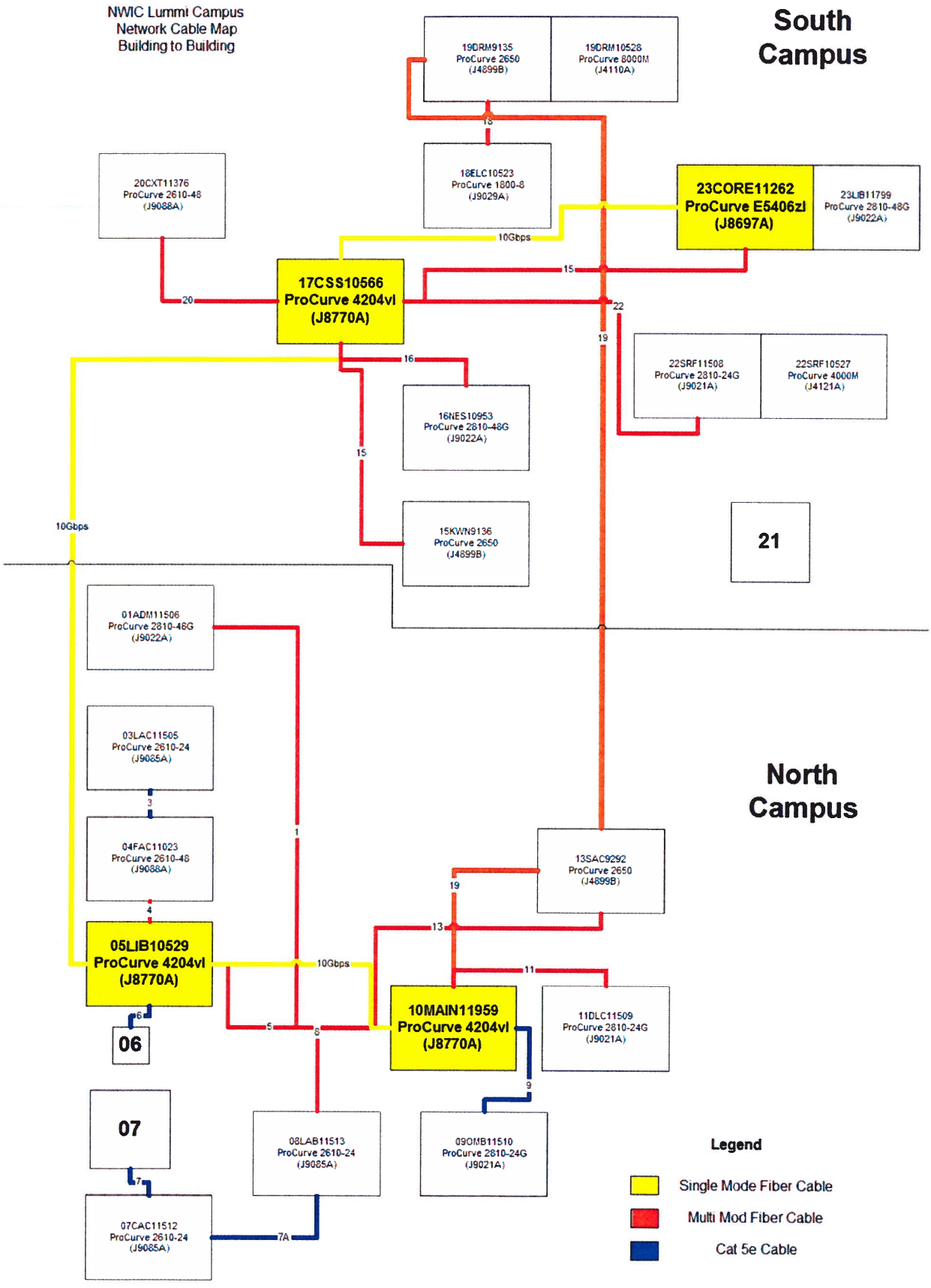
Strategic Goals:

a) Build virtual and physical communities to support enhanced science via communication and collaboration.
b) Enhance learning in and out of the classroom
c) Enhance Student research and current research grants
d) Support faculty and staff use of technology for work productivity and communication

Intra-campus resources

Northwest Indian College has implemented significant upgrades to the network infrastructure throughout its North and South campuses. Since the start of May of 2012, NWIC Information Technology Department began deploying network equipment and new fiber optic and copper cabling. We have also invested in a new state of the art I.T. building that we just moved into February of 2014.We have also invested in redundancy with 9 APC Smart-UPS XL Modular 3000VA 120V Rack mount/Tower with 9 APC SUM48RMXLBP2U Smart-UPS XL Modular 48V Extended Run Battery Pack, APC server and wire racks, with an applicable HVAC system and a generator The Server room itself is approximately 200 square feet. NWIC also has battery back ups at each location and are currently upgrading and or rplacing UPS at key locations.

The campus backbone network infrastructure consists of Layer 3 switch at the core with 10 Gbps connecting 10 Gbps dark fiber connections that are directly connected to the main core switch. Procurve Switch 4204vl switches were used for the distribution layer in buildings and have been directly connected to the backbone at 10 Gbps. Various Procurve switches were used for the edge connections to provide 1 Gbps to 10 Gbps backbone. The result is that every leg of campus is directly connected to NWIC core network. The 802.11n wireless standard is used on the wireless network, which consists of Aerohive access points and Aerohive cloud controllers and power-over- Ethernet access ports are on all edge switches. (not sure if we need to add anything about redundancy)


NWIC Lummi Campus
Network Cable Map
Building to Building
South Campus
19DRM9135
ProCurve 2650
(J4899B)
19DRM10528
ProCurve 8000M
(J4110A)
18
18ELC10523
ProCurve 1800-8
(J9029A)
20CXT11376
ProCurve 2610-48
(J9088A)
23CORE11262
ProCurve E5406zl
(J8697A)
23LIB11799
ProCurve 2810-48G
(J9022A)
10Gbps
15
20
17CSS10566
ProCurve 4204vl
(J8770A)
22
19
22SRF11508
ProCurve 2810-24G
(J9021A)
22SRF10527
ProCurve 4000M
(J4121A)
16
16NES10953
ProCurve 2810-48G
(J9022A)
15
15KWN9136
ProCurve 2650
(J4899B)
21
10Gbps
01ADM11506
ProCurve 2810-48G
(J9022A)
03LAC11505
ProCurve 2610-24
(J9085A)
3
04FAC11023
ProCurve 2610-48
(J9088A)
4
1
13SAC9292
ProCurve 2650
(J4899B)
19
13
05LIB10529
ProCurve 4204vl
(J8770A)
10Gbps
11
10MAIN11959
ProCurve 4204vl
(J8770A)
11DLC11509
ProCurve 2810-24G
(J9021A)
6
06
5
6
9
07
08LAB11513
ProCurve 2610-24
(J9085A)
09OMB11510
ProCurve 2810-24G
(J9021A)
7
07CAC11512
ProCurve 2610-24
(J9085A)
7A
North Campus
Legend
Single Mode Fiber Cable
Multi Mod Fiber Cable
Cat 5e Cable

Performance monitoring

Regular throughput tests are conducted using the perfSONAR toolkit via the Network Diagnostic Tester and Network Path and Application Diagnosis services. These devices allow for the highspeed transfer of data between NWIC researchers and resources within the dedicated high-speed science network. We are currently looking at Commercial such as GFI MAX and open sorce resources to improve the data that is available to system and network administrators regarding the performance of the servers and network.

NWIC Information Technology Department is responsible for the operation and maintenance of campus data and video networks, which includes the underground fiber and video cable plant, the fiber and wiring plant for the data and video network in each building, and routers, switches, and various other network components. Information Technology Department is also responsible for the design and implementation of data and video networks in new construction as well as renovations to existing facilities. The design and implementation of the dedicated high-speed science network will fall under the purview of Information Technology Department.

Establishing dedicated network for Scientific Research

Currently here at the Northwest Indian College campus, there is no dedicated networking and data transfer services for scientific research. However, the data transfer requirements from scientific computing groups differs significantly from the rest of the networking demands. Scientific research groups are data driven and their Researh will generate data and a need for immediate storage, and analysis services. Reaseachers here on campus will need online data visualization tools, which cannot be delivered in a centralized manner at the NWIC main campus. So the NWIC is planning to establish dedicated network policies to prioritize data transfers between scientific computing groups. Collaborating with Salish Sea Research Center.

This task is currently at its exploratory phase. However, NWIC is committed to make it happen. We will plan to send a number of our staff members to attend the network summit conferences hosted by the Internet-2 community.

The new infrastructure will immediately provide access to the most technologically current Relational Data resources to all of our PI's current research projects who maintain collaborations locally, nationally and internationally. The speed and reliability will enhance the data management capabilities from these improvements will allow us to take advantage of large scale scientific data collection and yield faster, comprehensive work involving undergrads and graduate students.

IPv6 Deployment

NWIC has been allocated a provider dependent IPv6 network block. All front end network equipment including switches, routers, and firewalls are IPv4/IPv6 are dual stack capable. IPv6 is implemented on all networks using native dual stack which enables and supports the gradual migration of applications and network services. The deployment model consists of a geographical scheme in which the different campuses and remote locations may participate with service provider peering sessions. Local router and subnet information can easily be identified while also providing an association to IPv4 addressing for

documentation purposes. Best practice mechanisms have been implemented on the network to enhance security and provide fault tolerance. The initial deployment relies on stateless address autoconfig, and will be implemented with support for DHCPv6 available as related protocols and operating systems mature. IPv6 commodity and Internet2 peering has been established which allows researchers to utilize new services as they become available.

InCommon Federation

The InCommon Federation is the U.S. education and research identity federation, providing a common framework for trusted shared management of access to on-line resources. Through InCommon, Identity Providers can give their users single sign-on convenience and privacy protection, while online Service Providers control access to their protected resources. NWIC University participates in the InCommon federation which allows any federation participating organization to use Shibboleth identity attribute sharing technologies to manage access to online resources which can be made available to the InCommon community.