Pacific Wave Integration

CLARA Network Engineering Group

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This document describes the integration of RedCLARA in the Pacific Wave exchange facility, and the traffic exchange policy to be adopted.

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Version – 1.1

VERSION MANAGEMENT

This document outlines the integration of RedCLARA to the Pacific Wave exchange facility. When new procedures are required or other changes made, it will be updated accordingly, and the new version release will be recorded in the table below.

Version	Modification	Date	Reviewed by
preliminary	First draft	18-Oct-2006	Eriko Porto
1.0	Corrections and changes	12-Mar-2007	Eriko Porto
1.1	Corrections and changes	18-Apr-2007	Eriko Porto

Summary

1. Introduction

As an outcome from the WHREN-LILA project, that funded the fiber infrastructure between Tijuana and San Diego, RedCLARA gained access (an entry point) to the USA networks. The NSF (National Science Foundation) funded an extension of this infrastructure to the one that currently permits the access to the Pacific Wave exchange facility.

Pacific Wave (www.pacificwave.net) is a joint project between the Corporation for Education Network Initiatives in California (CENIC) and the Pacific Northwest Gigapop (PNWGP), and is operated in collaboration with the University of Southern California and the University of Washington. Designed to enhance efficiency of IP traffic, Pacific Wave peering services offer opportunities to:

- Pass IP traffic directly with other major national and international networks;
- Reduce costs associated with IP traffic that would otherwise transit multiple circuits;
- Increase efficiency by directing traffic as quickly as possible to the target network/organization, reducing the number of 'hops' required to complete for the data to get to its destination.

RedCLARA has now presence in Pacific Wave, and is able to peer with any other network already present there, or in the process to become affiliated to the project in a near future.

This document describes the infrastructure in use for this service by RedCLARA and the policy adopted for establishing new BGP peering sessions.

2. WHREN-LILA Project description

The WHREN, Western Hemisphere Research and Networking (www.whren-lila.net), initiative is:

- A cooperative of research and education networks across the Americas;
- A community based cyber infrastructure;
- A forum for Pan American collaboration.

The U.S. National Science Foundation Award #OCI-0441095 supports WHREN through funding of Links Interconnecting Latin America (LILA)

- Partially funding a fiber acquisition between San Diego, California and Tijuana, Mexico which will initially provide a 1 Gigabit per second (Gbps) link .
- Connectivity growing to 10 Gbps over five years.
- Partially supporting a 1.2 Gbps connection between Miami, Florida and Sao Paolo, Brazil.

The remaining funds are provided by the Academic Network of Sao Paolo (ANSP) *Projeto Fapesp no. 04/14414-2*, the Corporation for Education Network Initiatives in California (CENIC) and Florida International University (FIU).

3. Pacific Wave description

Pacific Wave is a distributed International Exchange located in geographically dispersed locations along the Pacific Coast. It serves metropolitan, national, and international advanced optical networking infrastructure initiatives (Figure 1).

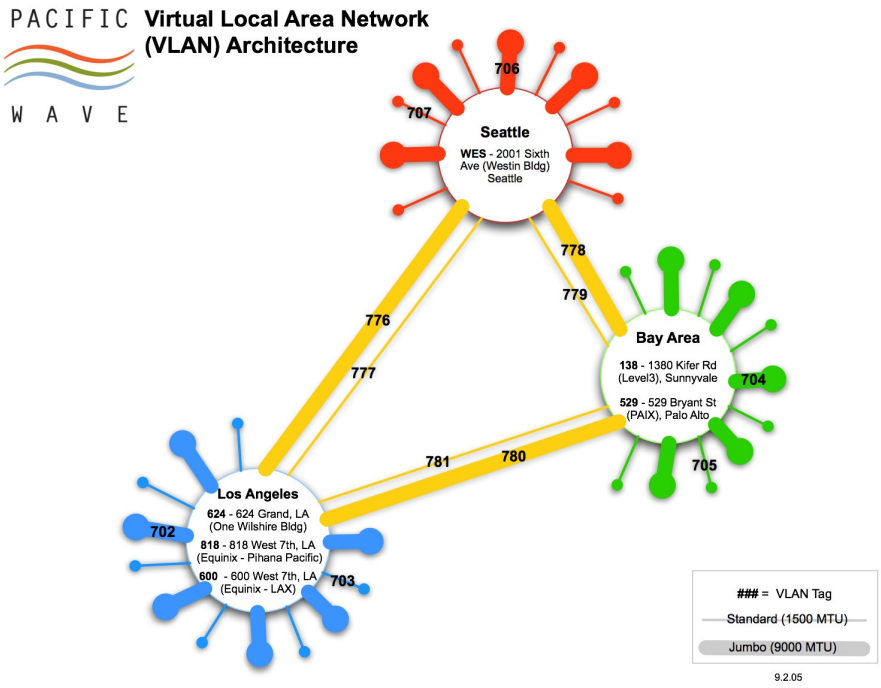

Figure 1 – Pacific Wave architecture

Pacific Wave's shared exchange is a layer 2 exchange comprised of local and intersite VLANs for IPv4, IPv6 and multicast packets. There are VLANs for jumbo and non-jumbo enabled sites as well.

Each participant is provided with IP addresses for its local VLAN and all necessary intersite VLANs. For example, if a participant is connected in Los Angeles, it would be able to peer with participants that are located in Seattle and the Bay area as well.

4. Peering policy

The RedCLARA policy is to establish multiprotocol BGP peering sessions to allow IPv4 and IPv6 unicast traffic exchange, IPv4 and IPv6 multicast traffic exchange, and also establish MSDP peering sessions to allow for multicast sources to be announced and received through the backbone, using preferentially the jumbo frame enabled VLAN whenever possible, depending on the peering network availability.

The sessions will be established by means of agreements requested by CLARA to other institutions, or upon request from other participant network, always in coordination with the CLARA-NOC, based on the availability of the services described above, if, and only if, the institution clearly runs a research and educational network, with traffic presented to RedCLARA expected to be solely originated from research and educational applications, as stated in RedCLARA's "Acceptable Use Policy" document approved by the General Assembly.

Other institutions and networks not exclusively academic, which accepts and/or exchange partial or full commercial traffic, and are interested in peering with RedCLARA, must have their requests analyzed and submitted to the Technical Committee for subsequent endorsement decision.