IPAC Computing Infrastructure

Wendy Burt

IPAC Systems Group Supervisor

IPAC Systems Group (ISG)

ISG supports :

- computing systems ranging from desktops to high performance computing cluster nodes for 8 projects

- gigabit network infrastructure

- petabyte storage infrastructure (1.5 petabyte by end of Q1)

- data center infrastructure with 80+ racks

- post-launch operations with 24x7 support

IPAC Logical Network Diagram

IPAC Computing Infrastructure

Perimeter Network Service (PNS)

Internal Network Service (INS)

Internet

neighbor   IPAC

R — R — FW — R

IDS   DMZ   IDS

FW — Eng Dev Test Ops

FW — Eng Dev Test Ops

Projects
WISE
Admin
PLANCK
SSC
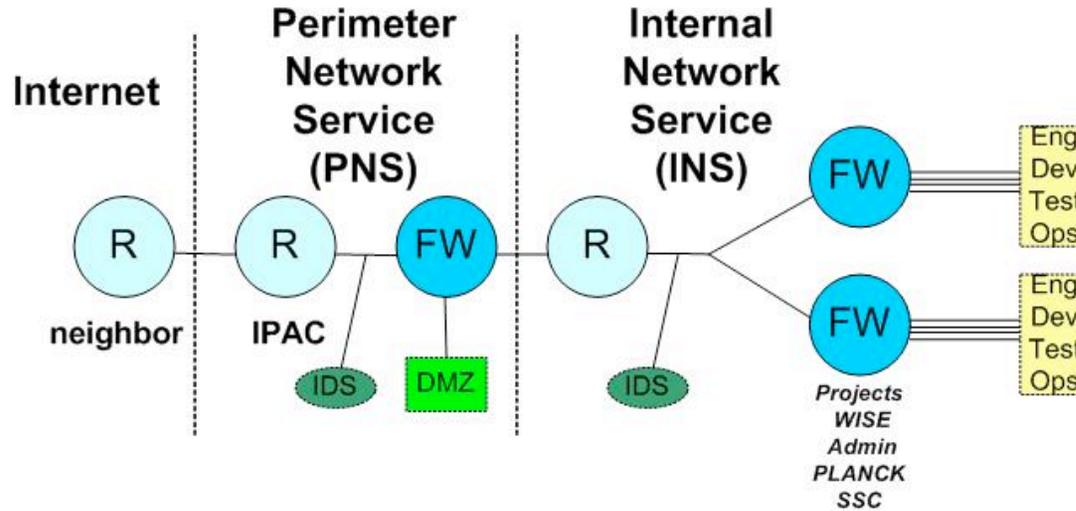
Legends:

R   Router -- network packet forwarding agent

FW   Firewall -- network packet inspection and filtering agent

IDS   Intrusion Detection System -- network packet inspection and logging agent

DMZ   Demilitarized Zone -- controlled area contains public services accessible to internet
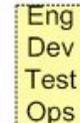
Eng Dev Test Ops   Project Subnets – protected area contains project resources

Steven Lo
Version: 2.1

Network Diagram

Network Functional Diagram (5 year plan)
Version 3.1
Steven Lo
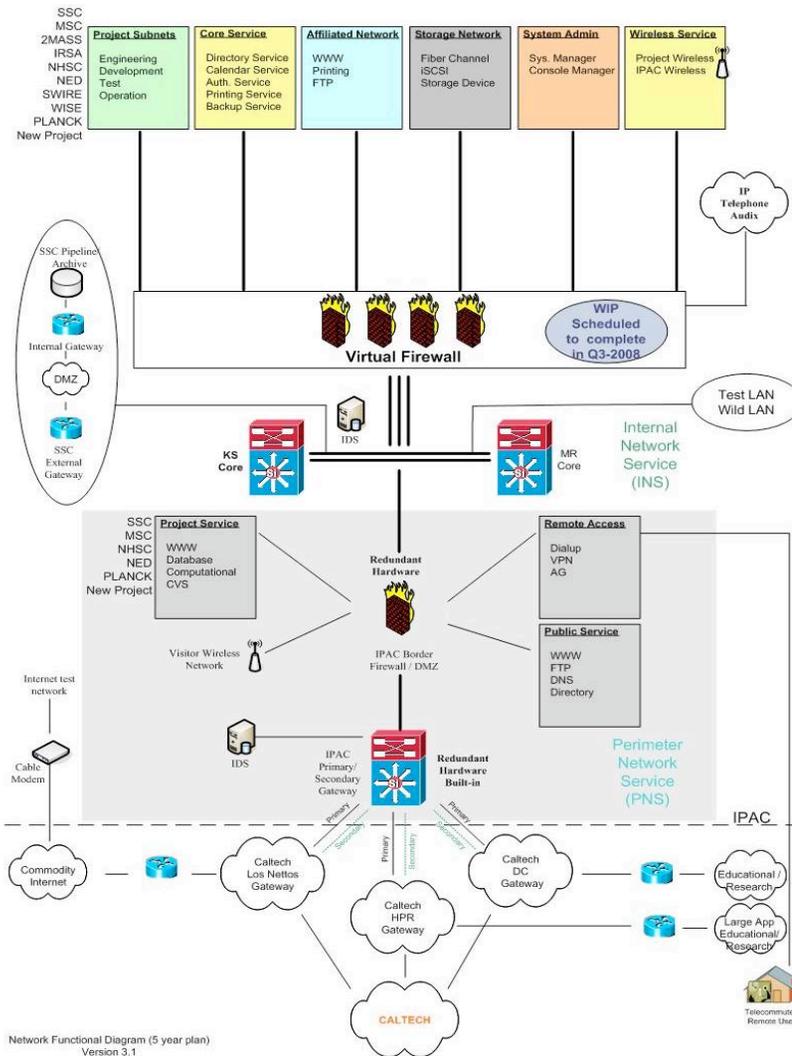
- **Perimeter Network Service (PNS) layer provides:**
    - Network packet routing
    - Firewall functions
    - DMZ for public services
    - Intrusion Detection System

- **Internal Network Service (INS) layer provides:**
    - Virtual Firewall framework
    - Gigabit network throughput

Layered Security Model

Security Penetration Testing
(IPAC and Caltech)

Perimeter Network Services
(Firewall and DMZ)

Intrusion Detection System

Network Traffic Monitor

Internal Network Services
(Host Based, Physical, Social)
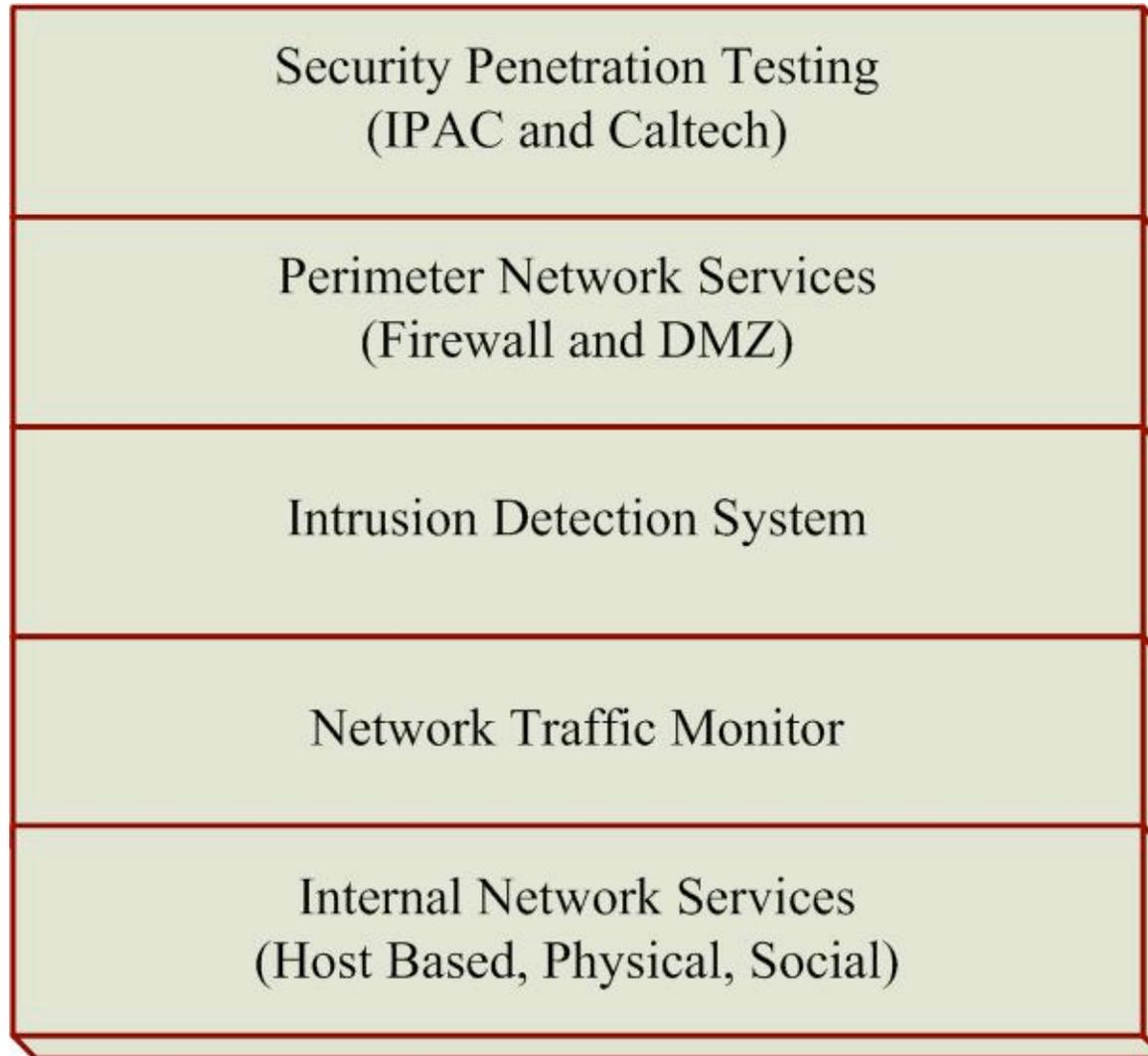
System Redundancy and Configuration Management

File Server Built-in Redundancy:

- RAID 1 (mirrored) on Operating System disk

- RAID 5 on data disks

Cluster Nodes Configuration Management:

- Linux Kickstart configuration files

- Average system rebuild is within 2 hours (if replacement hardware is available)