INTERIM IP ALLOCATION POLICY PROPOSAL

IP Allocation Policy Team
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IP ALLOCATION POLICY TEAM

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• Our area:
  – Criteria for IPv4 address allocation
  – Exception process

• Not our area:
  – IP reclamation project
  – Other solutions to the IPv4 address shortage
• Do what is best for the University
• Transparency
  – Everyone should understand the policy, process, and decisions
• Fairness
  – No favorites: decisions are made based on what is best for the University
• “Fail gracefully”
• Interim IP Allocation Policy
  – Submit/Approve by CIO
  – Goal: end of September 2008

• IP Allocation Policy (non-interim)
  – Submit to CIO/ITC for approval
  – Goal: by January 1, 2009
  – *NOTE: This has now been deferred to the new Committee*
INTERIM POLICY ROADMAP

• Present to NAG 8/22
• revise
• Present to NAG again?
  – touch up?
• Present to Campus
  – tech-partners/network contacts (today)
  – others?
• revise
• Submit to CIO
ISSUES BRAINSTORM: We thought about a lot of stuff

• Education/Technical Q&A
• Who can ask?
• speed of approvals
• speed of appeals/exceptions
• timespan
• tactical vs strategic requests
• minimum allocation size
• firewall and application implications
• larger allocations
• chain of command/workflow
• DHCP
• new allocations vs consolidation
• reserved for future use/needs
• criteria/justification
WHAT ARE OTHERS DOING?

• Only example I could find: Utah
  – No specified limit on allocations
  – Only consider three month needs
  – Renumbering/consolidation: three months to complete project
  – 80% utilization standard
TYPES OF ALLOCATION REQUESTS (TRIGGERS)

• Regular expansion/growth
• Extra-ordinary growth
• Specific project
  – new cluster, virtualization project, ...
• Renumbers/consolidation
  – may result in more efficient allocation
• Tried to develop formula/decision-tree for allocation request approval
  – At least the “easy” cases
• Conclusion: each case is unique
  – even the “easy” cases
• Idea: Model IP allocations like budget allocations
  – IP addresses are a scarce resource
    • purpose?
    • need for new funds vs use of existing funds?
    • likelihood of success?
    • need/mission of the University?
• Small work group with /24, 10 unallocated IPs
• Staff grows by 15
• Expansion design trade-offs:
  – Option 1: /24 -> /23
  – Option 2: additional /27 or /26
  – Option 3: move printers to private IP space
  – All require staff time
  – Some are easier for department staff
  – Option 1: higher under-utilization
  – Options 2 and 3: added complexity
• Wired in two parts, many different groups
  – Switches trunk to routers at CSSC
  – /22 + /24 per side
• Expansion design trade-offs:
  – option 1: /21 per side
    • Higher potential under-utilization (x2)
  – option 2:
    • Additional smaller blocks allocated as needed
    • “1-armed routing” via CSSC
    • Increased round-trip traffic
    • Need more bandwidth: spend someone's money
• Strawman Interim Policy presented to NAG on 8/22
• Proposed IP Allocation Committee to review all allocation requests
• Feedback: concern about adding “red tape” and delays
• Revised proposal: recognize additional flexibility required for Interim Policy, Committee and process
Due to the growth of the Internet and new Internet-connected devices, and limitations in the Internet Protocol (IPv4), availability of additional IPv4 addresses is extremely limited. In order to deal with this resource limitation while meeting the needs of the University, the following interim policy is proposed:
INTERIM IP ALLOCATION POLICY PRINCIPLES:

1. IP address space is a campus resource. Stewardship of this resource, and responsibility for efficient and equitable allocation is assigned to the office of the CIO.

2. The allocation, approval and appeals process must be transparent, flexible, timely and responsive.
3. The allocation process must consider and balance the competing resource issues of IP address space constraints and limited staff time, impact on projects and operations, network complexity, and budget for all involved organizations.

4. Due to the limited availability of IPv4 addresses, conservation of existing address resources will be given high priority.
In order to implement these policy principles, the CIO will appoint an IP Address Committee as follows:
1. The Committee will include a minimum membership of:
   a. One (1) technical staff representative from the DoIT Network Services department
   b. One (1) technical staff representative from other campus organization(s)
   c. Two (2) At-large members from the campus
   d. One (1) designated representative of the office of the CIO

Note: Need to include non-network technical knowledge
2. The Committee will work with the DoIT Network Services department to establish procedures to review and consider all IP address space requests, and make a recommendation on each allocation request.

3. The Committee's recommendations may be appealed to the CIO.
4. The Committee will work with the DoIT Network Services department to gather and analyze data about the use, allocation and projected campus needs for IP address space, and make regular reports to the CIO and campus.

5. The Committee will monitor the IP Allocation process, and make adjustments and recommendations as needed.
In addition, the Committee will make recommendations to the CIO and Information Technology Committee on a non-interim IP allocation policy.
RECOMMENDATION: IP NETWORK PLANNING FORM

• Submitted by network contact
• Current usage, projected usage
  – 3 months, 6 months, 1 year
  – funded or potential
  – gradual growth or specific project
• Conservation tools considered/applied?
• Other questions?
• Utilization report attached
  – Best: standardized report from Network Engineering tools
  – Unknown staff time to implement
ADDITIONAL RECOMMENDATIONS

• The Committee should be extremely responsive and transparent
  – Regular reports to interested parties on campus
  – Work with all parties for best solutions to each situation: not a red-tape guessing game

• Make every effort to increase awareness of the process and issues in advance
  – No surprises
• Try and apply same criteria at start of process and at end
• The first few months will require more Committee involvement, more review of requests until working history/knowledge established
OTHER ISSUES

• Documentation/Guidelines/Standard configurations
  – for various IP conservation techniques
  – for network design options
    • 1-armed routing, consolidation/renumbering, DHCP, firewall configurations ...

• Education/Awareness

• Funds and Staff Time

• Other technical trade-offs
  – cross-campus vlans vs. point-to-point VPN vs. additional subnets vs. dedicated fiber ...
QUESTIONS, FEEDBACK and DISCUSSION