NETWORK ACCESS PROTECTION

Windows Vista Security
End-of-Class Problem: Executive Presentation

Mitigation for Common Threats in
Higher Education Network Environment using Microsoft NAP

AGENDA

- Business issues
- Security Assessment
- Engineering Assessment
- Operations Assessment
- Conclusion

EXECUTIVE TEAM

- Team members
  - Barry Randall – U. Iowa
  - Tom Neese – U. Iowa
  - Aaron Howard – U. Iowa
  - Addam Schroll – Purdue
  - MSFT: Barbara Chung

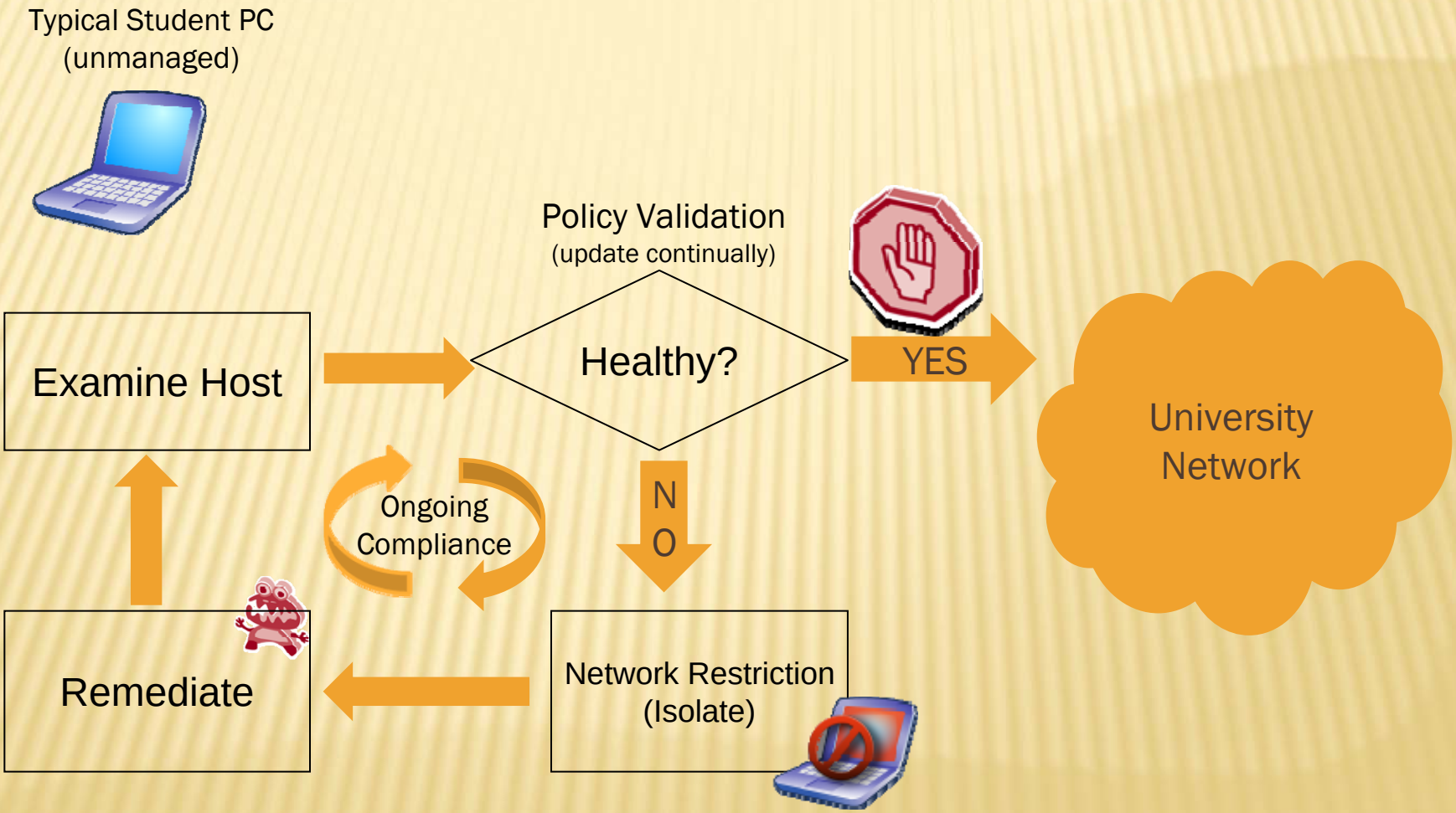
ORGANIZATION

- Thousands of unmanaged machines
- High infection rate
- Continuing threat to resources and services
  - Lost time, services, reputation, resources
- Distributed organization

THREATS

- Transient customers makes security a challenge
- Isolate and remediate hosts at connection time to address these threats
- Need to define the “Network Edge” with Policy, not Topology

OVERVIEW OF NETWORK ACCESS PROTECTION



SECURITY TEAM ASSESSMENT

Team members

- Aaron Howard
- Addam Schroll

SECURITY TEAM ASSESSMENT THREATS

- Worms, Bots, DoS, Zero-Day, Remote Access Users, Guests
- Continually these threats occur with varying severity
  - Increased support, ID theft, confidential data
- Serious ongoing threats that continue to consume time and jeopardize network reliability and security
  - Not all threats can be measured with $$

THREATS AND COUNTERMEASURES

- Worms, Bots, Remote Access Users, Guests
  - NAP offers network access as an incentive to voluntarily comply with University Policy
  - Remediation servers allow client to help themselves to required software or patches
  - Client must meet current Policy requirements before joining network
  - Resulting in Lower risk of wide spread infection
- Zero Day Virus
  - By updating the System Health Policy, only servers with the latest definitions are allowed network access.

THREATS AND COUNTERMEASURES

- NAP does not protect against malicious users or compromised machines
  - Can a compromised machine trick the NAP agent by posing as healthy?
- NAP will protect Vista and XP SP2, other devices will be allowed as exceptions
  - Exception management is a potential loophole for infected machines

DEFENSE IN DEPTH

- Develop risk management strategy
  - Avoid, Transfer, Mitigate, Accept
- Improve host management with user education
- Improved threat and vulnerability monitoring
  - Identify & communicate threats to campus
- NAP is a compliance tool not a security tool
- Improve Network Security
  - Firewalls, IDS, IPS, Application inspection, deviation analysis

ENGINEERING TEAM ASSESSMENT

- Team Members
  - Barry Randall
  - Tom Neese

ENGINEERING TEAM ASSESSMENT

PREREQUISITES

- Network Access dependent on AD and NAP
- Create policy to define network edge
  - Change of Mindset – expect resistance
- Evaluate enforcement methods & exemption methods
  - DHCP, DNS, 802.1x, IPSEC, Radius
  - UNIX, PDA, Game Box, Mac OSX, lab equipment
- Create procedure to manage exceptions
- Create System Health Policy
  - May involve using the SHV API
  - Can SHA perform all required checks?

ENGINEERING TEAM ASSESSMENT
DEPENDENCIES

- Infrastructure Requirements
  - AD, DHCP, IPSEC and 802.1X
- Client OS level – Vista or XP with SP2
- Agent (SHA) running on client

ENGINEERING TEAM ASSESSMENT

USAGE & USER EXPERIENCE

- Unmanaged student PCs
  - Windows Vista or XP SP2
- Vendor or Guests
- User Education
- Help Desk Needs

ENGINEERING TEAM ASSESSMENT

TIMEFRAME (estimates)

- Build Network Infrastructure for NAP – 1 to 2 years
  - Implement 802.1X
  - Restricted Network
- Create Network Edge Policy – 6 months
- Build NAP Infrastructure – 3 to 6 months
  - Network Policy Server
  - Health Certificate Server
  - DHCP Server
- Create Initial System Health Policy – 3 months
- Evaluate Exceptions – 3 to 6 months
- Train Help Desk – 1 month

ENGINEERING TEAM ASSESSMENT ISSUES

- Shift to define network edge with policy
- Exceptions
  - Will others adopt the SHA API
  - Require custom code to manage
- How to install SHA on Windows XP SP2
- Third party tool support
- Resources required to implement NAP

OPERATIONS TEAM ASSESSMENT
HOW WOULD WE MAINTAIN THIS?

- Team Members
  - Tom Neese
  - Barry Randall

OPERATIONS ASSESSMENT RESOURCE REQUIREMENTS

- Staff to Develop and Maintain System Health Policy
- Help Desk staff time to help users navigate remediation process
- User education on System Health Check
- Support for 24/7 network access needs

OPERATIONS ASSESSMENT ISSUES

- How to manage exceptions
- Justify resources for a partial solution
- Continual maintenance of policies
- Additional layer to troubleshoot
- Buy-in from others on redefinition of Network Edge
- Enforcement Strategy

CONCLUSION

- Network Edge is continually changing
  - Need Policy (NAP) to protect University Network
- NAP is built-in to Vista & Longhorn (low $$)
  - Infrastructure costs could be high
- Lowers risk of wide-spread network infection
- Not a silver bullet, but another layer of security

RECOMMENDATIONS

- Evaluate risk from unmanaged PCs
  - Separate by exceptions
  - Cost to manage exceptions
- Recommendations
  - Assess and upgrade network infrastructure
  - Analyze Risks vs. Cost to deploy NAP
  - Watch for NAP support in other Operating Systems