

# AF WINDOWS 2000 Status



Feb 2000

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# AF Windows 2000 Overview

- Win2K Background
- Domain Name System (DNS)
- Exchange 2000/DMS
- Test Architecture
- AF Topology Options
- Challenges
- AF Windows 2000 JDP Results

# Overview

- **Win2K is due for public release on 17 Feb 00**
- **Effort underway to develop comprehensive AF Win2K architecture**
- **Goal is to develop standards for VPN, firewall, directory, domains, operations, and policy**

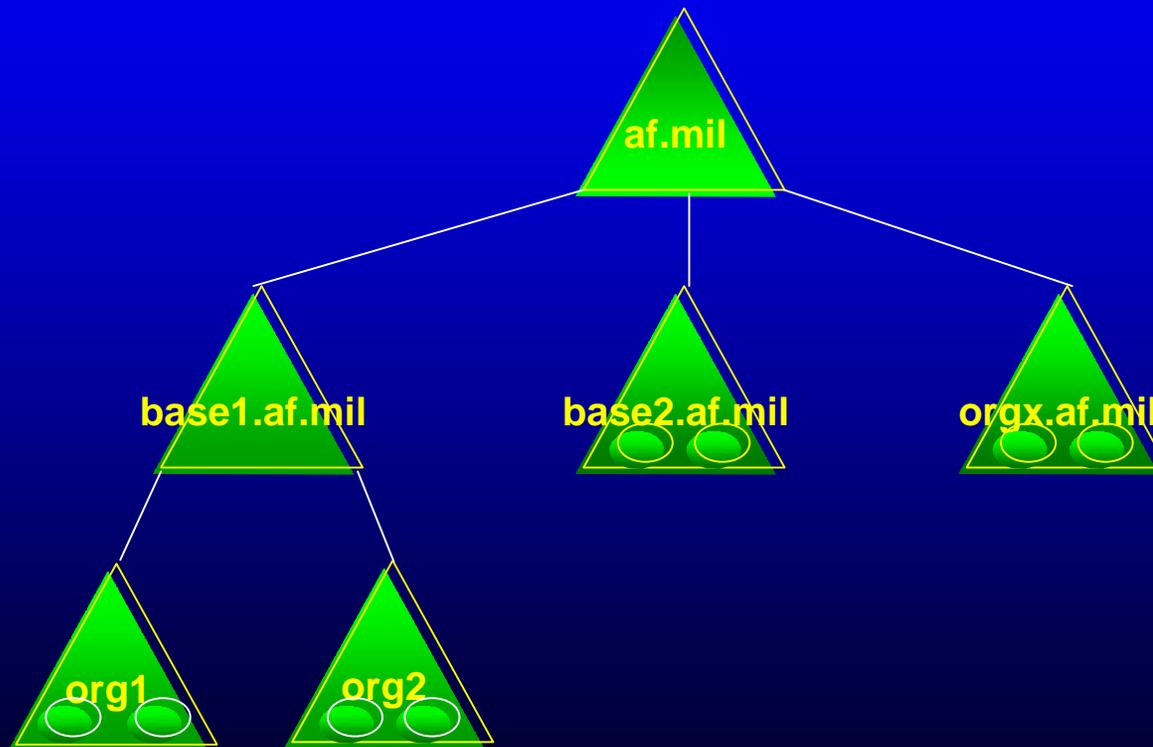
## **NT 4.0 Background**

- **Win NT 4.0 widely implemented across AF**
- **No AF coordinated effort to consider AF security, policy, and operations during deployment**
- **Multiple independent domains at org/base level**
- **NT 4.0 has limitations**
  - **Granularity of administration (all or nothing)**
  - **Security**
  - **Reliability, availability, scalability**
  - **Trust relationships**
  - **Remote management**
  - **Manpower intensive administration**

# AF WIN2K Planning Decisions

- **Domain and tree structure**
- **Domain Naming System (DNS) design**
- **Replication**
- **Security and firewall configurations**
- **Migration strategy**
- **Training**
- **Standards for**
  - **Naming**
  - **Group policy**
  - **Administration procedures**
- **Exchange 2000 implementation**

# Active Directory AF Architecture Example



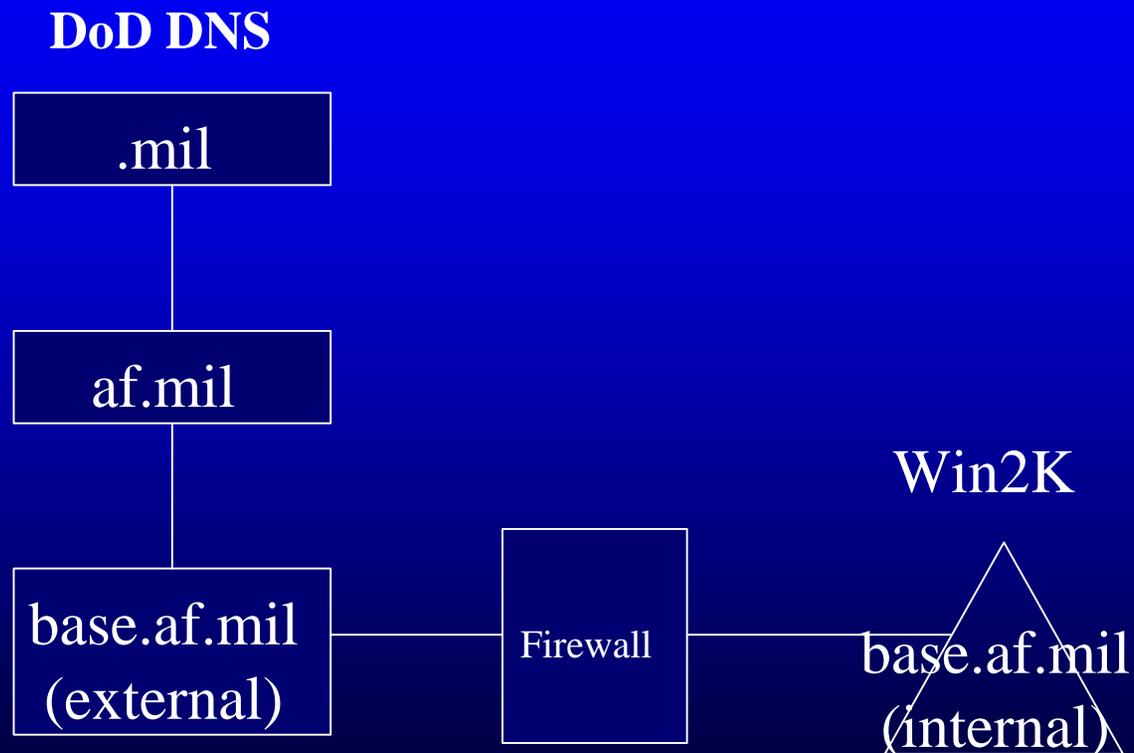
# **Active Directory Architecture Design Considerations**

- **The forest has a common directory schema**
- **Top-down design is necessary**
- **Grafting and pruning of trees/forests difficult**
- **Win2K facilitates use of fewer domains**
- **A transitive trust is established across the forest**
- **Joining domains only allows the ability to assign permissions**
- **No one can gain permissions to another domain unless that domain explicitly grants it**

# Domain Name Service (DNS)

- **Win2K uses DNS as Active Directory locator**
  - Clients find Domain Controller by DNS query
- **Can use Win2K DNS or non-Win2K DNS**
- **Non-Win2K DNS must support Bind ver 8.21 or higher**
  - Support for SRV records (mandatory)
  - Dynamic DNS (optional but highly desired)

# Potential Domain Name Service (DNS) Architecture - Near Term



**Win2K hosts the internal base DNS**

## **Reason to use Win2K for internal base DNS**

- **No reliance on separate system**
- **Very easy to use and manage**
- **Win2K DNS supports secure DDNS**

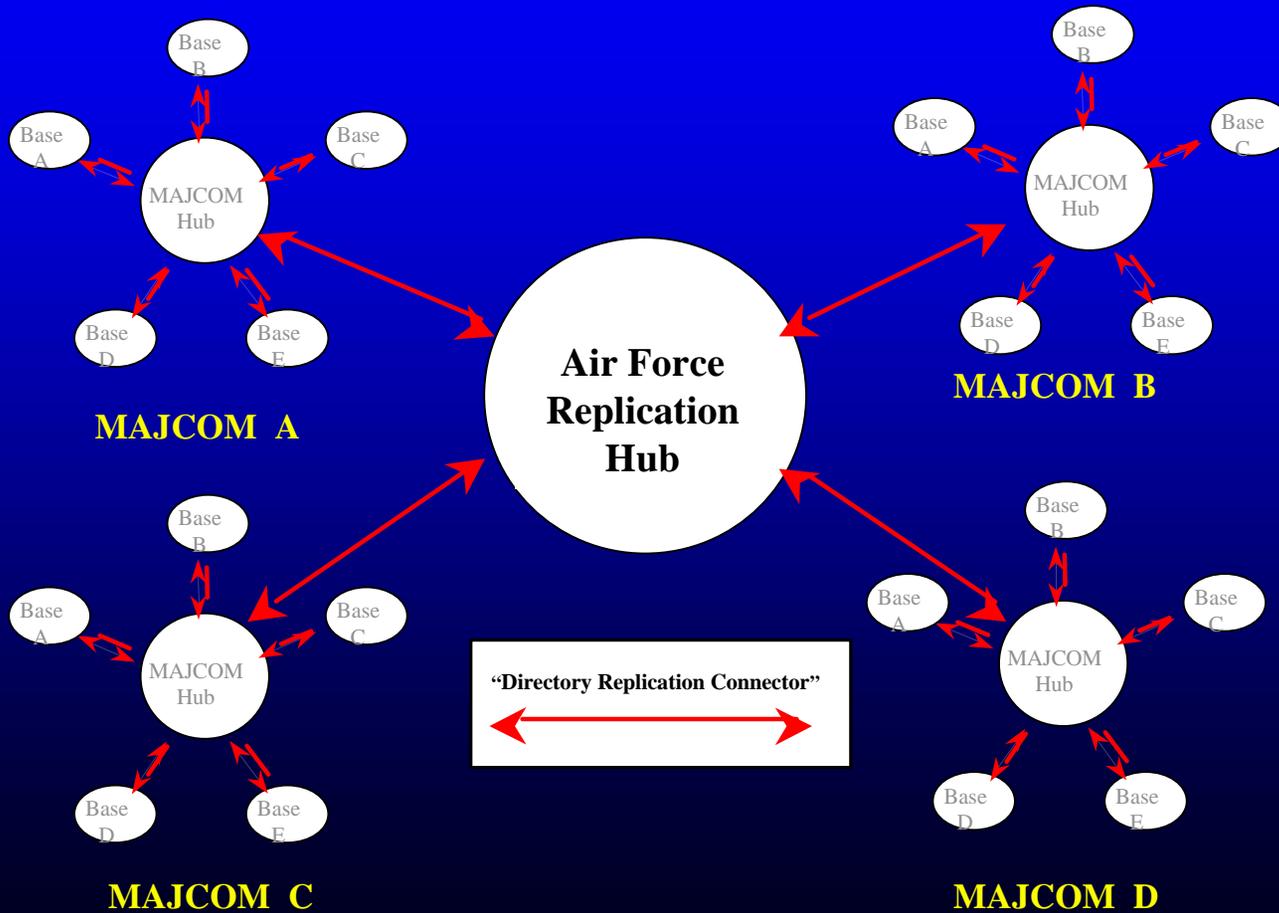
# Exchange 2000

- **Window 2000 incorporates Active Directory as a complete directory service**
- **Next version of Exchange (Exchange 2000) uses Active Directory for directory services**
- **Active Directory Connector provides migration to use of Active Directory**
- **Exchange admin is performed through the MMC**
  - **Exchange admin of Exchange 5.5 site connected with ADC can be done via MMC also**

# Exchange 2000

- **Exchange 2000 will automatically create the needed object classes and attributes**
  - Done once in a forest; needs Enterprise Admin
- **AF Directory Replication will change over to Active Directory**
- **The boundary of replication in Active Directory is the forest**

# AF Wide Exchange Replication



## **Exchange 2000 and DMS**

- **DMS 2.2 client can be loaded on Windows 2000 Professional as a non-core product**
- **DMS 3.0 (late 2000) will be Exchange 5.5 on NT4.0 and Win2K (non-Active Directory)**
- **DMS 3.1 (summer 2001) will be based on Windows 2000 (Active Directory) and Exchange 2000**
- **Exchange 2000 may not be used in the AF until DMS 3.1 is approved for implementation**

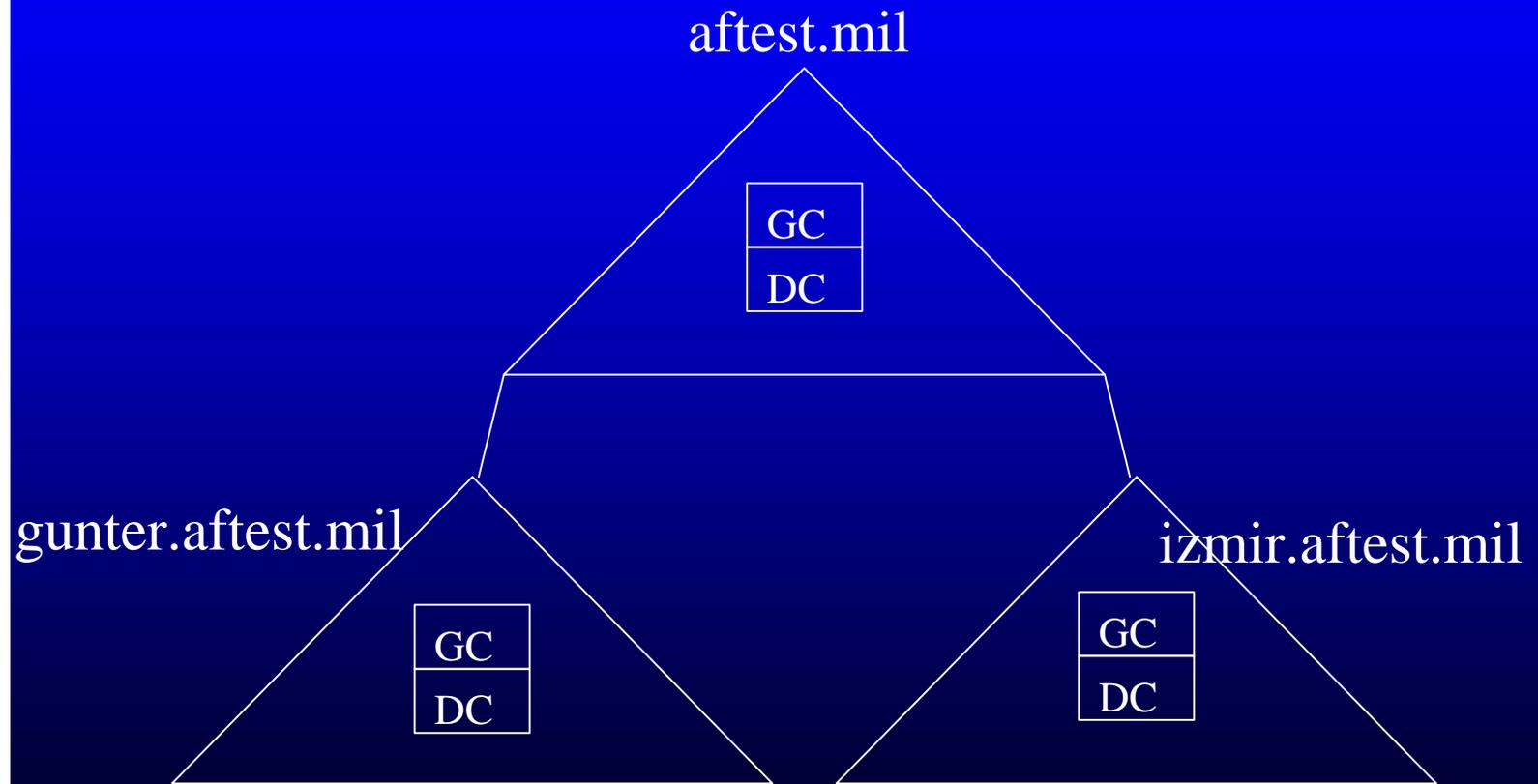
# **AF Win2K Technical Advisory Group**

- **SSG (Lead)**
- **Microsoft Consulting Services**
- **DMS-AF Program Office**
- **AF Network Operations Center (AFNOC)**
- **AFIWC**
- **AFCA**

# **AF WIN2K Domain Testing Objectives**

- **Build internal expertise**
- **Test interoperability with AF systems**
- **Determine firewall/security requirements**
- **Recommend group policies**
- **Evaluate use of Win2K Domain Name Service (DNS)**
- **Establish remote monitoring system**

# AF Win2K Domain Testing Architecture



# AF Win2K Test Environment

## Test Results

- **Domain structure (tree, forest) security**
  - Able to use IPsec to protect inter-system traffic
  - However, Kerberos passed outside the tunnel
  - Microsoft working on fix
- **Domain Replication**
  - WAN replication to Izmir worked well
  - Able to join domains and maintain a off-site DC for `afitest.mil`
- **DNS Structure**
  - BIND ver 8.21 worked
  - Earlier versions need to be updated

# **AF Win2K Architecture Options**

- **1 – Separate standalone base domain/forest**
- **2 – Two-level geographic (single AF forest, domains determined by geography)**
- **3 – Multi-level organizational**
- **4 – World-wide single domain**
- **5 – Three level geographic with organizations on level 2, bases on level 3**
- **6 – Organizational with organizational units (OUs)**
- **7 – Multiple forests with theaters at top levels and bases underneath**
- **8 – Multiple theater domains with geographic OUs**
- **9 – Top level at .GOV or .MIL**

## **Evaluation Criteria – How did we Narrow the Options?**

- **Would it be Secure?**
- **Could the Network Support the Traffic?**
- **Would it be Manageable?**
- **Was it Compatible with the AF Organization?**
- **Could it provide an AF Wide Common Directory**
- **Was it Restructure Safe?**
- **Was it Compatible with Existing Infrastructure?**

## **Architecture Recommended by AF TAG - Option 1 with a Plan to Move to Option 2 When Security Permits**

- **Separate Single Base Domain/Forest to gain the security, reliability, and manageability of Windows 2000**
- **Use VIA (Zoomit) synchronization provide AF Wide E-Mail Directory**
- **Consolidation into an Air Force wide tree when read only configuration and schema replicas are possible**

# **AF Win2K Architecture Document**

- **Similar in format to AF E-mail Design Document**
- **Contents:**
  - **Recommended architecture**
  - **Migration from NT 4.0**
  - **Security**
  - **Management structure**
  - **Implementation guidance**
  - **Client configuration**
  - **Server configuration**
  - **System evolution**
- **Provides baseline for how to do Win2K in AF**

# **AF Win2K Schedule**

- **17 Feb 00 – OK to use Win2K Professional**
- **1 Apr 00 – OK to use Win2K Member Server**
- **1 Aug 00 – AF Win2K Architecture Document due**
- **1 Oct 00 – OK to implement Active Directory**
- **Summer 2001 – OK to implement DMS 3.1 & Exchange 2000**

# AF Challenges

- **Directory Integration**
  - DMS, DoD PKI, others
- **Integration of Advanced Security**
  - Digital signature, encrypted messaging, SSL sessions, authentication/smart cards, VPNs
- **Firewall Integration**
- **Inclusion of MAJCOM NOSCs into structure**
- **Funding**
- **Central Program Office**
- **Base level technical support**

# **Windows 2000 Joint Deployment Program (JDP)**

- **Background**
- **Hardware**
- **Applications**
- **Windows 2000 Professional Rollout**
- **Lessons Learned**

# **Windows 2000 JDP Background**

- **Designed to Promote Direct Interaction**
- **Learn real-world lessons that could be applied AF-Wide**
- **Deploy Beta Software in Production Environment**
- **Direct Access to Development Team**
- **Bug Resolution**
- **Server Down Support**

# Windows 2000 Pro Rollout

## Hardware

Brand	Model	BIOS	Memory	Video	Hard Disk	NIC	Other
Compaq	Deskpro EP/SB Series PII 300/66	Phoenix ROM 99.04.02, BIOS 686T1(?), 9830-B2T2-D556	64MB	ATI Technologies Inc. 3D RAGE IIC AGP	3.2GB	Intel 21041 Based PCI	LS-120 100MB Floppy Disk Drive
Dell	Dimension XPS R450	Phoenix ROM BIOS 4S4EBOX1.10A.0019.P09 (A09)	128MB	ATI Technologies Inc. 3D RAGE PRO AGP 2X	2.0GB	3C905C	PCMCIA, IDE CDROM
Gateway	G6-200 Pro 200	AMIBIOS 1.00.11.CS1T	64MB	Matrox Graphics Millenium PCI	3.1GB	3C905-TX	
Micron	ClientPro XVI, Pro 200	AMIBIOS 1.00.07.CS15	64MB	S3 Virge	4GB	PCI SMC CE 8432, dated 1995	PCMCIA, IDE CDROM
Zenith	Z-Station GT Pro	AMIBIOS 1.00.06.CS1	64MB	ATI Technologies PCI Mach64	2.2GB 3.2GB	PCI SMC CE 8432, dated 1995	PCMCIA, IDE CDROM

# SSG Test Methodology – RTM

- **Conducted in Lab**
  - used individual AIS's test plans
  - Developer & functional present for testing
- **Tested using various scenarios**
  - Clean W2K load, upgrade from Win 95, upgrade from Win 98, upgrade from NT 4.0
  - each AIS removed at completion
- **Testing Documentation**
  - individual test plans were turned in for each AIS
  - summary sheet of results for all tested AIS's

# SW Application Testing Results RTM

AIS	W2K	W95 Upgrade	W98 Upgrade	NT Upgrade
• SCTS-CBT	G	G	G	G
• AFDT-CBT	G	G	G	G
• CALM	G	G	G	G
• MIS	G	G	G	G
• AFORMS	In Progress	In Progress	In Progress	In Progress
• FitSoft	G	G	G	G
• Firefighter	G	G	G	Y
• AFTERPS	R	R	R	R
• SMAS	G *	G *	G *	G *

\* Minor display anomaly observed – corrected

# SW Application Testing Results RTM

AIS	W2K	W95 Upgrade	W98 Upgrade	NT Upgrade
• BARS	G	G	G	G
• AFDIR	G	G	G	G
• LOGMOD	G	G	G	G
• SFMIS	In Progress	In Progress	In Progress	In Progress
• EVMS	G	G	G	G
• JLIM	G	G	G	G
• InfoConnect	G	Y *	Y *	G
• IPMS	G	G	G	G
• BEMIS	G	G	G	G

\* Passed after de-installing/reinstalling – retesting with vendor support

# SW Application Testing Results RTM

AIS	W2K	W95 Upgrade	W98 Upgrade	NT Upgrade
• RIMS	G	G	G	G
• SBSS	Y	Y	Y	Y
• MicroBAS	In Analysis	In Analysis	In Analysis	In Analysis
• WICU-R	Scheduled	Scheduled	Scheduled	Scheduled
• WMS	Scheduled	Scheduled	Scheduled	Scheduled
• CDS	G	G	G	G

# COTS Software Testing Results (SSG)

For Information Only – SSG will not warrant the compatibility of COTS products with W2K

Product	Results
• PVCS	G
• Office 97/Office 2000	G
• Oracle Developer 2.0	G
• Powerbuilder 5.0	G
• JAVA Developer Kit 1.2.1	G
• Formflow	G *
• Remedy	G
• Visual Studio	G
• InstallShield 5.5	Y

\* Minor display anomaly

# COTS Software Testing Results (SSG)

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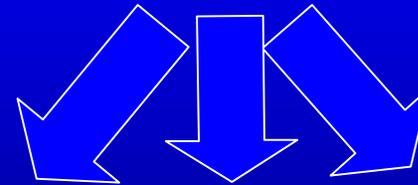
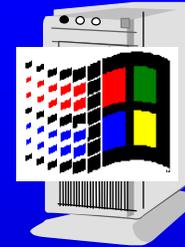
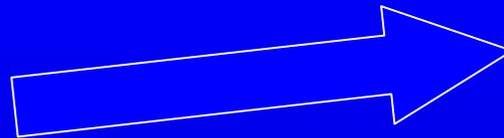
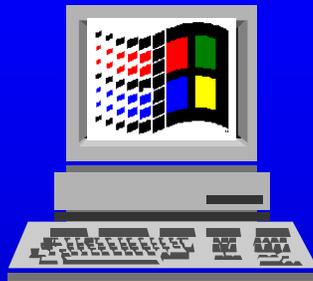
Product	Results
• Outlook 98	G
• Outlook 2000	G
• DMS Client 2.1	R
• Oracle RE	G
• DOORS	In Progress
• Norton AV 5.0	Y*
• Norton AV 6.0	G

\* seems to work, but vendor won't support on W2K

## **Future Steps**

- **Test Against RTM – in progress**
- **Incorporate W2K Testing into Release Testing Methodology**
- **Certify SSG-supported desktop applications as *Windows 2000 Ready* NLT 17 Feb 00**
- **Certify SSG-supported server applications as *Windows 2000 Ready* NLT 1 Apr 00**

# Windows 2000 Pro Rollout



1. Install, Configure Windows 2000

2. Install, Configure Applications

3. Run System Preparation tool

- Shutdown system

4. Run Third Party Image Copy tool

- Examples: PowerQuest DriveImage, Symantec Ghost (SSG uses ImageCast)...
- Copy Image to Server, CD, etc.
- Copy Image to target PCs using CD, multicast, or network share

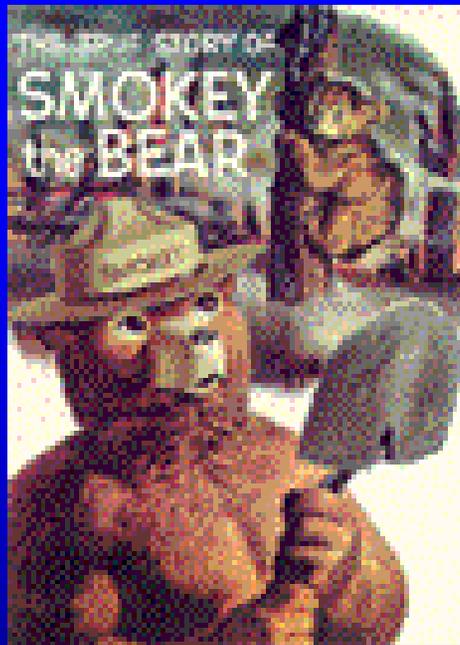
5. On first boot complete configuration

- Regenerate SID (Security Identifier)
- Auto Create options: ComputerName, UserName, CompanyName, Admin Password. Plug and Play adjusts for different video, etc. BUT NOT different hard disk controllers

# **Windows 2000 Rollout**

## **Lessons Learned**

- **Dedicated Team to Plan and Deploy Windows 2000**
- **Ensure Systems Have Latest BIOS Installed**
- **Don't Upgrade Compressed Drives**
- **Run “winnt32.exe /checkupgradeonly”, HCL & SCL**
- **NT 4.0 SP 4 Upgrade to Windows 2000 Very Reliable**
- **Win 9.x Upgrade to Windows 2000 with Minor Issues**
- **Bit Copy Sysprep Method Software Investment**



**Smokey Says...**  
**“Prevent Forest Fires - Plan Your  
Migration to Windows 2000”**

**AF Win2K web site: [web3.ssg.gunter.af.mil/win2k](http://web3.ssg.gunter.af.mil/win2k)**