Arkansas Department of
information
Systems
EMPOWERING THE CITIZENS OF ARKANSAS THROUGH TECHNOLOGY

Digital Forensics

- Things to consider
  - NTP - Enable Network Time Protocol for all devices
  - Ensure Windows Client synchronized with AD
  - Decide on GMT offset or a consistent time zone across organization
  - Establish central logging capability
  - Out of band notification capability, can’t be monitor by an insider or attacker

- Things to avoid
  - Don't shutdown until you've completed evidence collection
  - Attacker may have altered the startup/shutdown scripts/services to destroy evidence.
  - Run your evidence gathering programs from appropriately protected media
  - Don't run programs that modify the access time of all files on the system (e.g., 'tar' or 'xcopy')
  - Simply disconnecting or filtering from the network may trigger wiping of evidence

Server Event Logs

- Windows Event Viewer
  - logs application and system messages
  - errors, information messages, and warnings
  - Events are placed in different categories
    - Application: events related to Windows system components, such as drivers and built-in interface elements.
    - System: events related to programs installed on the system.
    - Security: When security logging is enabled (it’s off by default in Windows), this log records events related to security, such as logon attempts and resource access.
- Windows Event ID
  - Define the uniquely identifiable events that a Windows computer can encounter
  - When the audit log was cleared, the system generate event 1102
  - https://docs.microsoft.com/en-us/windows-server/identity/ad-ds/plan/appendix-l--events-to-monitor

- Windows Event ID
  - Services Events
    - Analyze logs for suspicious services running at boot time
    - Review services started or stopped around the time of a suspected compromise
      - 7034 – Service crashed unexpectedly
      - 7035 – Service sent a Start/Stop control
      - 7036 – Service started or stopped
      - 7040 – Start type changed (Boot | On Request | Disabled)
      - 7045 – A service was installed on the system (Win2008R2+)
      - 4697 – A service was installed on the system (from Security log)

- Windows Event ID
  - Account Authentication Events
    - 4776: Successful/Failed account authentication Event ID Codes (Kerberos protocol)
    - 4768: Ticket Granting Ticket was granted (successful logon)
    - 4769: Service Ticket requested (access to server resource)
    - 4771: Pre-authentication failed (failed logon)

- Windows Event ID
  - Success/Fail Logons
    - 4624 – Successful Logon
    - 4625 – Failed Logon
    - 4634 | 4647 – Successful Logoff
    - 4648 – Logon using explicit credentials (Runas)
    - 4672 – Account logon with superuser rights (Administrator)
    - 4720 – An account was created

- Windows Event ID
  - Logon details
    - Nature of account authorizations on a system
    - Date
    - Time
    - Username
    - Hostname
    - Success/failure status of a logon
    - Logon Events also enables us determine by exactly what means a logon was attempted

- Windows Event ID
  - Logon Types
    - Event ID 4624
      - 2 Logon via console
      - 3 Network Logon
      - 4 Batch Logon
      - 5 Windows Service Logon
      - 7 Credentials used to unlock screen
      - 8 Network logon sending credentials (cleartext)
      - 9 Different credentials used than logged on user
      - 10 Remote interactive logon (RDP)
      - 11 Cached credentials used to logon
      - 12 Cached remote interactive (similar to Type 10)
      - 13 Cached unlock (similar to Type 7)

- Tracking Remote Desktop Activity
  - RemoteDesktopServices-RdpCoreTS > Operational
    - Event ID 131
      - The server accepted a new TCP/UDP connection from client
  - TerminalServices-LocalSessionManager > Operational
    - Event ID 21
      - Remote Desktop Services: Session logon succeeded
      - User
      - Session ID
      - Source Network Address
  - TerminalServices-RemoteConnectionManager > Operational
    - Event ID 1149
      - Remote Desktop Services: User authentication succeeded
      - User
      - Domain
      - Source Network Address

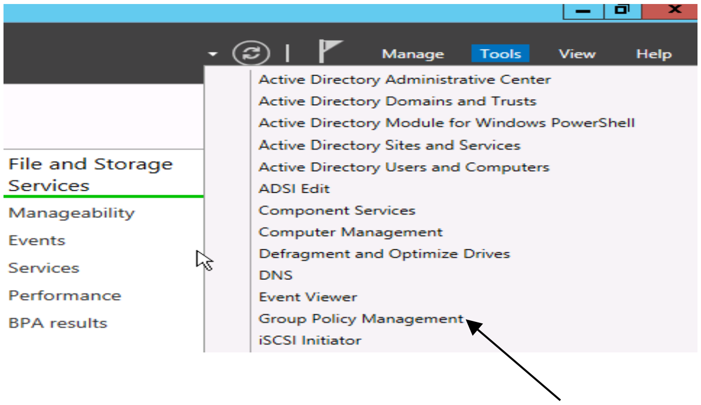
Requirements for Event Viewer logs for Server and local network devices

*The following Group Policies must be enabled

Retain Security Event Log for 90 Days Group Policy

1. Launch **Server Manager**.

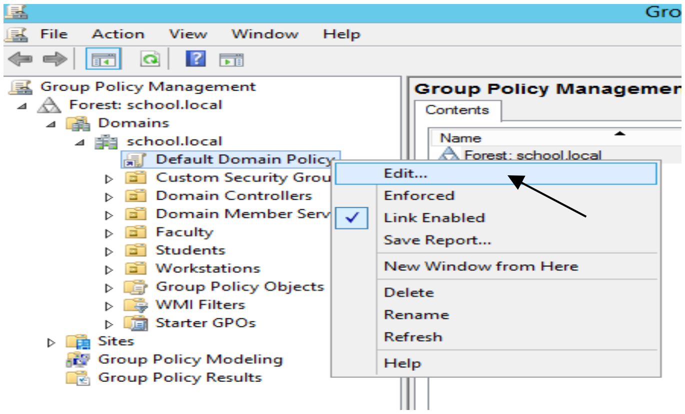
2. Click on **Tools** and select **Group Policy Management** from the drop-down list.


Manage
Tools
View
Help
File and Storage Services
Manageability
Events
Services
Performance
BPA results
Active Directory Administrative Center
Active Directory Domains and Trusts
Active Directory Module for Windows PowerShell
Active Directory Sites and Services
Active Directory Users and Computers
ADSI Edit
Component Services
Computer Management
Defragment and Optimize Drives
DNS
Event Viewer
Group Policy Management
iSCSI Initiator

3. Expand Forest: **yourdomain.local.**

4. Expand **Domains** and then expand **yourdomain.local** and navigate to **Default Domain Policy**.

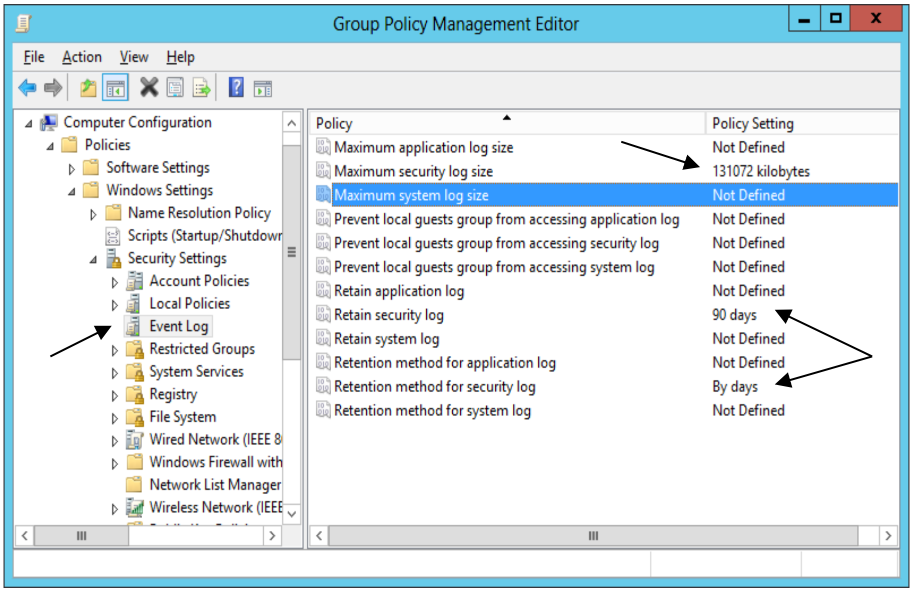
5. Right-click the **Default Domain Policy** and click **Edit**.



6. Expand **Computer Configuration** > **Policies** > **Windows Settings** > **Security Settings** and select **Event Log.**

7. Set the policy setting **Retain Security Log** to **90** days. You will automatically prompted to change the **Retention method to days**. Click **OK.**

8. Set the Maximum-Security Log Size to 131072 kilobytes (128MB).



Policy	Policy Setting
Maximum application log size	Not Defined
Maximum security log size	131072 kilobytes
Maximum system log size	Not Defined
Prevent local guests group from accessing application log	Not Defined
Prevent local guests group from accessing security log	Not Defined
Prevent local guests group from accessing system log	Not Defined
Retain application log	Not Defined
Retain security log	90 days
Retain system log	Not Defined
Retention method for application log	Not Defined
Retention method for security log	By days
Retention method for system log	Not Defined

AUTO-BACKUP AND CLEAR EVENT LOGS (AT LEAST WINDOWS VISTA)

9. Expand **Computer Configuration** > **Policies** > **Administrative Templates** > **Windows Components** > **Event Log Service** and select **Security**.

10. Enable the **Backup log automatically when full** setting.

11. Close the **Group Policy Management Editor.**

SECURITY EVENT AUDITING – SECURITY EVENT LOG CONTENTS

1. Launch **Server Manager**.

2. Click on **Tools** and select **Group Policy Management** from the drop down list.

3. Expand Forest: **yourdomain.local.**

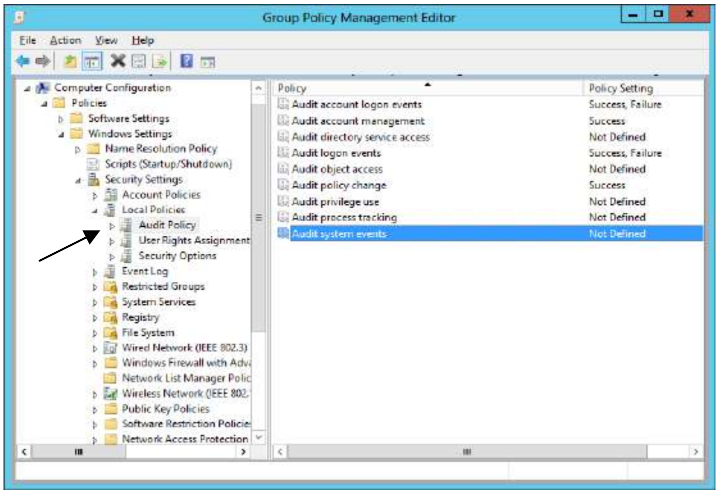
4. Expand **Domains** and then expand **yourdomain.local** and navigate to **Default Domain Policy**.

5. Right-click the **Default Domain Policy** and click **Edit**.

6. Expand **Computer Configuration** > **Policies** > **Windows Settings** > **Security Settings** > **Local Policies** and select **Audit Policy.**

7. Enable auditing for the following Policy Settings:

   a. Audit Account Logon Events – (Success AND Failure)
   b. Audit Account Management – (Success)
   c. Audit logon event – (Success AND Failure)
   d. Audit policy change – (Success)



Policy	Policy Setting
Audit account logon events	Success, Failure
Audit account management	Success
Audit directory service access	Not Defined
Audit logon events	Success, Failure
Audit object access	Not Defined
Audit policy change	Success
Audit privilege use	Not Defined
Audit process tracking	Not Defined
Audit system events	Not Defined

8. Close the **Group Policy Management Editor.**