BitLocker Network Unlock & BitLocker support for Encrypted Drives

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Agenda

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- Windows Requirements for Network Unlock
- Validating Network Unlock
- BitLocker & Encrypted Drives
- Windows Requirements for Encrypted Drives
- Validating Encrypted Drives
- Questions
BitLocker Network Unlock
BitLocker Network Unlock

• Windows 7 BitLocker Unlock experience
  – TPM + PIN key protector which provides a high level of protection
  – Significant deployment problem for servers, which need to be serviced and restarted with no human interaction
  – Power management calls for shutting down or hibernating machine in order to save electricity, especially at night
  – Causes problems by preventing Wake-On-LAN

• Windows 8 improves BitLocker Unlock experience
  – No user prompting
  – Uses Wired network, Windows Deployment Server (WDS) & DHCP
  – BitLocker (at pre-boot) discovers its Network Unlock provider on WDS
  – Retrieves a secret from WDS
  – Automatically unlocks the OS volume using the secret & the TPM
  – Systems without wired network use TPM + PIN
Requirements for Network Unlock

- Systems with wired LAN ports and TPMs must support BitLocker Network Unlock
  - Requires full DHCP support for wired LAN during pre-boot through a UEFI DHCP driver
  - Includes support for EFI_DHCP4 and DHCP6 protocols defined in UEFI 2.3.1
    - EFI_DHCP4_PROTOCOL
    - EFI_DHCP4_SERVICE_BINDING_PROTOCOL
    - EFI_DHCP6_PROTOCOL
    - EFI_DHCP6_SERVICE_BINDING_PROTOCOL
- If implemented for Server
  - Support for both IPv4 and IPv6 required
- System.Fundamentals.Firmware.UEFIBitLocker
Validating Network Unlock

- Download the ‘Network Key Protector Test Suite’ from Microsoft Connect & Refer Instructions
- Use 3 Machines & a regular Network Switch
- Setup DHCP server - Windows Server 2008 R2 or Windows 8 Server
- Setup WDS Server - Windows 8 Server only
  - Install WDS role and BitLocker Network Unlock feature
  - Initialize WDS server – Type from Administrator CMD prompt: ‘wdsutil /Verbose /initialize-server /reminst:"c:\Remotestandalone’
  - Add Network Unlock private certificate: Run ‘server-applycert.cmd’
  - Restart WDS Server: Run ‘net stop wdsserver’ & Run ‘net start wdsserver’
- Setup UEFI Client – Windows 8 Client
  - Setup Group Policy: Run ‘client-gp-usepin.cmd’
  - Add Network Unlock public key: Run ‘reg import RSA2048NKP_FVE_NKP.reg’
  - Turn on BitLocker with TPM+PIN (1234) & Save the Recovery Password
  - Verify ‘manage-bde –status’ output protector lists has “Network (Certificate based)”
  - Restart the machine
- If OS boots directly to Windows Logon → Network Unlock works
- If prompted for BitLocker PIN, IPv6 and IPv4 Network Unlock failed
BitLocker support for Encrypted Drives
BitLocker & Encrypted Drives

• Windows 7 BitLocker performance implications and storage support
  – Overhead during encryption, run-time, startup, etc.
  – Performance implications exacerbated on low-power PCs and Slates
  – Hardware Encrypted Drives not supported on Windows 7

• Windows 8 improves BitLocker performance and supports Encrypted Drives
  – Encrypted Drives offload processing to hardware
  – Specialized hardware reduces power use and increases battery life
  – Initial encryption time of volumes eliminated. Run time improved
  – BitLocker manages keys
  – Systems without Hardware Encrypted Drives use software based encryption
Requirements for Encrypted Drives

• Systems with Encrypted Drive must support BitLocker
  – Requires support for EFI_STORAGE_SECURITY_COMMAND_PROTOCOL defined in UEFI 2.3.1
    • IEEE 1667 TCG Silo
    • TCG OPAL v2.0
    • Single User Mode
  – Support Programmatic Tper Reset
• System.Fundamentals.Firmware.UEFIEncryptedHDD
Validating Encrypted Drives

• Correctly provision & partition using Windows 8 in-box tools like Setup / Diskmgmt.msc / Diskpart.exe
• Ensure TPM is enabled & activated (Use TPM.msc)
• “Turn on BitLocker” on the OS volume & Ensure to select “Run BitLocker system check” option on the final UI page
• Restart the machine & Type the following from an Administrator CMD prompt: ‘manage-bde -status’
• You are done if it says ‘Encryption Method: Hardware Encryption’
• If error message specifying BitLocker can’t be enabled appears after you login, then:
  – Capture the error information
  – Export the events from: Applications & Services Logs ➔ Microsoft ➔ Windows ➔ BitLocker-API
Questions?

• Contact
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Thanks for attending the UEFI Winter Plugfest 2012

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