Remote Administration and Maintenance

CTSYSADL – SYSTEMS ADMINISTRATION AND MAINTENANCE

LESSON 10 – WEEK 12-13

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NU MOA
School of Information Technology
BS Information Technology

REMOTE ADMINISTRATION AND MAINTENANCE

- Overview of Remote Management Service
- Server Maintenance

TOPIC OUTCOMES

At the end of the lesson, students must be able to:

- Identify remote administration and maintenance tools.
- Identify best industry practices in server administration and maintenance.
- Perform remote administration and maintenance of a Windows Server operating system.

WINDOWS REMOTE MANAGEMENT (WinRM)

- Windows Remote Management (WinRM) is the Microsoft implementation of the WS-Management protocol, which is a standard Simple Object Access Protocol (SOAP)-based, firewall-friendly protocol that allows interoperation between hardware and operating systems from different vendors.
- The WS-Management protocol specification provides a common way for systems to access and exchange management information across an IT infrastructure. WinRM and the Intelligent Platform Management Interface (IPMI) standard, along with the Event Collector service are components of the set of features known as Hardware management.

WHO IS WinRM FOR?

- The intended audience for Windows Remote Management is IT professionals who write scripts to automate the management of servers and independent software vendor (ISV) developers, who want to obtain data for management applications.

COMPONENTS OF WinRM AND HARDWARE MANAGEMENT

The following is a list of components and features that are supplied by WinRM and hardware monitoring:

- **WinRM Scripting API** - This scripting API enables you to obtain data from remote computers using scripts that perform WS-Management protocol operations.
- **Winrm.cmd -** This command–line tool for system management is implemented in a Visual Basic Scripting Edition file (Winrm.vbs) written using the WinRM scripting API. This tool enables an administrator to configure WinRM and to get data or manage resources. For more information, see the online help provided by the command line **Winrm /?**.

COMPONENTS OF WinRM AND HARDWARE MANAGEMENT

- **Winrs.exe -** This command line tool enables administrators to remotely execute most Cmd.exe commands using the WS-Management protocol. For more information, see the online help provided by the command line **Winrs /?**.
- **Intelligent Platform Management Interface (IPMI) driver and WMI provider** - Hardware management through the Intelligent Platform Management Interface (IPMI) provider and driver enables you to control and diagnose remote server hardware through BMCs when the operating system is not running or deployed.

COMPONENTS OF WinRM AND HARDWARE MANAGEMENT

- **WMI service** - The WMI service continues to run side-by-side with WinRM and provides requested data or control through the WMI plug-in. You can continue to obtain data from standard WMI classes, such as Win32_Process, as well as IPMI-supplied data.
- **WS-Management protocol** - a SOAP-based, firewall-friendly protocol, was designed for systems to locate and exchange management information. The intent of the WS-Management protocol specification is to provide interoperability and consistency for enterprise systems that have computers running on a variety of operating systems from different vendors.

CONFIGURATION OF WinRM AND IPMI

The following WinRM and Intelligent Platform Management Interface (IPMI) WMI provider components are installed with the operating system:

- The WinRM service starts automatically on Windows Server 2008, and later. On earlier versions of Windows (client or server), you need to start the service manually.
- By default, no WinRM listener is configured. Even if the WinRM service is running, WS-Management protocol messages that request data can't be received or sent.
- Internet Connection Firewall (ICF) blocks access to ports.

CONFIGURATION OF WinRM AND IPMI

- Use the *winrm* command to locate listeners and the addresses by typing the following command at a command prompt:
  - *winrm enumerate winrm/config/listener*
- To check the state of configuration settings, type the following command:
  - *winrm get winrm/config*

SERVER MAINTENANCE
(in the context of remote administration)

- Server maintenance ensures servers operate reliably, securely, and optimally. Remote management plays a critical role in this by allowing administrators to perform maintenance tasks from anywhere.

BEST PRACTICES IN SERVER MAINTENANCE and REMOTE ADMIN

1. **Implement Robust Security** – Use encrypted protocols, strong authentication, restrict management ports and access from known IPs. (For example, when enabling WinRM, secure it via HTTPS or limit trusted hosts).
2. **Automate Routine Tasks** – Update, patching, backups, and remediation scripts should run automatically or in scheduled windows to reduce manual error.
3. **Monitor Server Health** – Track performance metrics (CPU, memory, disk, network) and set alerts for anomalies.

BEST PRACTICES IN SERVER MAINTENANCE and REMOTE ADMIN

4. **Document Changes** – Keep a log of configuration changes, upgrades, who made them, and why. This aids troubleshooting and accountability.
5. **Limit admin exposure** – Use secure administrative hosts or jump servers so that administrative tasks happen from dedicated, controlled machines.
6. **Use Role-Based Access** – Grant the least privilege necessary and avoid default all-powerful accounts for routine maintenance.

MAINTENANCE TASKS VIA REMOTE TOOLS

Common maintenance tasks you can perform remotely via WinRM, PowerShell remoting, or RSAT include:

- Installing or updating server **roles and features** remotely using RSAT tools. (RSAT allows admins to manage server roles from client machines) Performing **server updates/patching** via remote scripts
- Collecting **logs** or performance data
- Rebooting servers or services
- Remote troubleshooting (e.g. checking event logs, service status)

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