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CATEGORY: WindowsEnvironment (Variables & System Paths)

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Environment-variable operations directly affect application behavior, system configuration, scripting, automation, and compatibility. These SOPs ensure every environment-related action performed through RDAM Script Wizard is **controlled**, **auditable**, and aligned with enterprise operational and security standards.

SOP 1 – List Environment Variables

1. Purpose

Retrieve all environment variables for system and user scopes.

2. Scope

- **System-level variables**
- **User-level variables**
- **Process-level variables**

3. Preconditions

- **Operator must have permission to query environment configuration**

4. Required Inputs

- **Optional: Scope filter (System/User/Process)**

5. Procedure Steps

- **Input Collection –** Wizard prompts for optional scope.
- **Variable Enumeration –** Retrieve variables from registry and process environment.
- **Attribute Extraction –** Name, value, scope.

- **Output Formatting –** Structured variable list.
- **Logging –** Scope, operator, timestamp.

6. Expected Output

- **List of environment variables with metadata**

7. Error Handling

- **Access denied**
- **Invalid scope**

8. Security Considerations

- **Variables may contain sensitive paths or credentials**

9. Audit Logging Requirements

- **Operator ID**
- **Scope**
- **Timestamp**

10. Organizational Benefit Statement

This procedure provides visibility into environment configuration, supporting troubleshooting, compliance, and application diagnostics.

SOP 2 – Get Environment Variable

1. Purpose

Retrieve the value of a specific environment variable.

2. Scope

- **System, user, and process variables**

3. Preconditions

- **Operator must have permission to query environment data**

4. Required Inputs

- **Variable name**
- **Optional: Scope**

5. Procedure Steps

- **Input Collection**
- **Scope Resolution**
- **Variable Lookup**
- **Output Formatting**
- **Logging**

6. Expected Output

- **Variable name and value**

7. Error Handling

- **Variable not found**
- **Access denied**

8. Security Considerations

- **Variable values may contain sensitive information**

9. Audit Logging Requirements

- **Operator ID**
- **Variable name**
- **Timestamp**

10. Organizational Benefit Statement

This procedure ensures accurate retrieval of environment data, supporting diagnostics and configuration validation.

SOP 3 – Set Environment Variable

1. Purpose

Create or update an environment variable.

2. Scope

- **System and user variables**

3. Preconditions

- **Operator must have administrative rights for system-level changes**
- **Variable name must be valid**

4. Required Inputs

- **Variable name**
- **Variable value**
- **Scope (System/User)**

5. Procedure Steps

- **Input Collection**
- **Validation –** Confirm name and scope.
- **Set Operation –** Write variable to registry.
- **Broadcast Change –** Notify system of environment update.
- **Post-Set Verification**
- **Logging**

6. Expected Output

- **Variable created or updated successfully**

7. Error Handling

- **Access denied**
- **Invalid variable name**

8. Security Considerations

- **Incorrect variables may break applications or scripts**

9. Audit Logging Requirements

- **Operator ID**
- **Variable name**
- **Scope**
- **Timestamp**

10. Organizational Benefit Statement

This procedure ensures environment variables are applied consistently and safely, supporting application stability and configuration management.

SOP 4 – Remove Environment Variable

1. Purpose

Delete an environment variable from the system or user scope.

2. Scope

- **System and user variables**

3. Preconditions

- **Operator must have administrative rights for system-level removal**
- **Variable must exist**

4. Required Inputs

- **Variable name**
- **Scope**

5. Procedure Steps

- **Input Collection**
- **Variable Resolution**
- **Removal Operation**
- **Broadcast Change**
- **Post-Removal Verification**
- **Logging**

6. Expected Output

- **Variable removed successfully**

7. Error Handling

- **Variable not found**
- **Access denied**

8. Security Considerations

- **Removing variables may break dependent applications**

9. Audit Logging Requirements

- **Operator ID**
- **Variable name**
- **Scope**
- **Timestamp**

10. Organizational Benefit Statement

This procedure ensures environment variables are removed safely and with full accountability, preventing configuration drift and application failures.

SOP 5 – Refresh Environment Variables (Session Reload)

1. Purpose

Reload environment variables for the current session without requiring a reboot.

2. Scope

- **User sessions**
- **Administrative shells**

3. Preconditions

- **Operator must have permission to modify session state**

4. Required Inputs

- **None**

5. Procedure Steps

- **Trigger Environment Refresh –** Reload variables from registry.
- **Session Update –** Apply updated variables to current shell.
- **Post-Refresh Verification**
- **Logging**

6. Expected Output

- **Updated environment variables applied to session**

7. Error Handling

- **Access denied**
- **Session refresh failure**

8. Security Considerations

- **Refreshing variables may affect running scripts or applications**

9. Audit Logging Requirements

- **Operator ID**
- **Timestamp**

10. Organizational Benefit Statement

This procedure ensures environment changes take effect immediately, improving workflow efficiency and reducing downtime.

SOP 6 – Get System PATH Breakdown

1. Purpose

Retrieve and analyze the system PATH variable for troubleshooting and configuration validation.

2. Scope

- **System PATH**
- **User PATH**

3. Preconditions

- **Operator must have permission to query environment configuration**

4. Required Inputs

- **Optional: Scope (System/User)**

5. Procedure Steps

- **Input Collection**
- **PATH Retrieval**

- **Entry Breakdown –** Split into individual paths.
- **Validation –** Check for missing directories, duplicates, or invalid entries.
- **Output Formatting**
- **Logging**

6. Expected Output

- **Structured PATH analysis**

7. Error Handling

- **Access denied**
- **Invalid scope**

8. Security Considerations

- **PATH entries may expose sensitive application locations**

9. Audit Logging Requirements

- **Operator ID**
- **Scope**
- **Timestamp**

10. Organizational Benefit Statement

This procedure ensures PATH integrity, supporting application reliability, troubleshooting, and security hardening.