**ServiceNow Country Integration - Complete Documentation**

**Section 1: Technical Documentation**

**Overview**

The Clean PDI Country Integration Script provides automated population of ServiceNow location table country choice lists using the REST Countries API. The solution creates a reusable Script Include and populates standardized country data with ISO-compliant formatting.

**Architecture Components**

**1. CountryIntegration Script Include**

* **Class**: CountryIntegration
* **Access Level**: package\_private
* **Dependencies**: sn\_ws.RESTMessageV2, GlideRecord
* **API Endpoint**: https://restcountries.com/v3.1/all?fields=name,cca2
* **Target Table**: cmn\_location
* **Target Element**: country

**2. Data Model**

Country Object Schema:

{

name: String, // Common name from API

code: String // ISO 3166-1 alpha-2 code

}

**3. Choice List Schema**

* **Table**: sys\_choice
* **Name**: cmn\_location
* **Element**: country
* **Value**: ISO alpha-2 code (e.g., "DK", "US")
* **Label**: Full country name (e.g., "Denmark", "United States")
* **Sequence**: Numeric ordering (increments of 10)

**Technical Specifications**

**API Integration**

* **Protocol**: HTTPS REST
* **Timeout**: 30 seconds
* **Retry Logic**: Single attempt (simplified version)
* **Error Handling**: Try-catch with logging
* **Security**: No authentication required
* **Rate Limiting**: Not implemented (API has generous limits)

**Data Processing**

* **Sorting**: Alphabetical by country name
* **Validation**: Checks for required fields (name, cca2)
* **Deduplication**: Skips existing entries by value comparison
* **Character Filtering**: Not implemented (relies on API data quality)

**Database Operations**

* **Insert Method**: GlideRecord.insert()
* **Query Method**: GlideRecord.addQuery()
* **Transaction Handling**: Automatic (ServiceNow managed)
* **Rollback**: Not implemented

**Performance Characteristics**

* **Execution Time**: ~30-60 seconds for 250 countries
* **Database Impact**: 250 INSERT operations
* **Memory Usage**: Minimal (streaming processing)
* **Cache Impact**: Triggers sys\_choice cache flush

**Error Handling**

Error Types Handled:

- API Connection Failures

- HTTP Status Errors

- JSON Parse Errors

- Database Insert Failures

- Script Include Creation Errors

**Security Considerations**

* **External API Dependency**: restcountries.com
* **Data Validation**: Basic presence checks only
* **Input Sanitization**: Minimal
* **Network Requirements**: Outbound HTTPS on port 443

**Limitations**

1. No data validation beyond presence checks
2. No support for custom country mappings
3. No incremental update mechanism
4. No backup/rollback functionality
5. Single language support (English)

**Section 2: Step-by-Step User Guide**

**Prerequisites**

Before running this script, ensure you have:

* ServiceNow admin or equivalent permissions
* Access to "System Definition > Scripts - Background"
* Outbound internet connectivity enabled
* No firewall blocking connections to restcountries.com

**Installation Steps**

**Step 1: Access Background Scripts**

1. Log into your ServiceNow instance
2. Navigate to **System Definition > Scripts - Background**
3. You should see a text area for entering scripts

**Step 2: Copy the Integration Script**

1. Copy the complete "Clean PDI Country Integration Script"
2. Clear any existing content in the background script area
3. Paste the entire script into the text area

**Step 3: Execute the Script**

1. Click the **"Run script"** button (not "Save")
2. Wait for execution to complete (may take 1-2 minutes)
3. Monitor the output logs that appear below

**Step 4: Verify Success**

Look for these confirmation messages in the logs:

* "Script Include created successfully"
* "Country sync successful: Added XXX countries"
* "SUCCESS: Country integration is ready!"
* "Denmark (DK) available: Yes"
* "Errors: 0"

**Step 5: Test the Integration**

1. Go to **Configuration > Location**
2. Click **"New"** to create a new location
3. Look for the **Country** field
4. Click the dropdown arrow next to the Country field
5. Verify you see approximately 250+ countries listed alphabetically
6. Confirm Denmark appears in the list

**What You Should See**

* **Before**: Empty or limited country dropdown
* **After**: Complete list of ~250 countries with proper formatting

**Common Issues and Solutions**

**Issue: "Script compilation error"**

* **Cause**: Copy/paste formatting problems
* **Solution**: Copy the script again, ensure no extra characters

**Issue: "API connection failed"**

* **Cause**: Network/firewall restrictions
* **Solution**: Contact your IT team to allow restcountries.com

**Issue: Countries not appearing in dropdown**

* **Cause**: Wrong table or caching issues
* **Solution**: Wait 5 minutes for cache refresh, then check again

**Issue: "Permission denied"**

* **Cause**: Insufficient user permissions
* **Solution**: Contact your ServiceNow administrator

**Expected Results**

After successful execution:

* **Script Include**: CountryIntegration class available for future use
* **Country List**: ~250 countries in Location dropdown
* **Format**: Two-letter codes (DK, US, GB) with full names
* **Ordering**: Alphabetical by country name

**Maintenance**

* The integration is one-time setup
* Countries will remain in your system permanently
* To update country data in the future, re-run the script
* No scheduled maintenance required

**Section 3: Improvement Suggestions**

**Immediate Enhancements**

**1. Enhanced Error Handling**

Improvements needed:

- Implement retry logic with exponential backoff

- Add specific error codes and messages

- Create fallback to cached/static country list

- Add transaction rollback on partial failures

**2. Data Validation**

Recommended validations:

- Country name length limits (2-50 characters)

- ISO code format validation (/^[A-Z]{2}$/)

- Duplicate detection across name variations

- Invalid character filtering for names

**3. Configuration Management**

Configurable parameters:

- API endpoint URL

- Timeout values

- Target table/element names

- Sequence increment values

- Excluded countries list

**Advanced Features**

**4. Incremental Updates**

Implementation approach:

- Track last sync timestamp

- Compare API data with existing records

- Update only changed entries

- Archive obsolete countries instead of deletion

**5. Multi-language Support**

Language considerations:

- Store country names in multiple languages

- Use ServiceNow's translation framework

- API supports native language names

- User locale-based display

**6. Data Quality Monitoring**

Monitoring features:

- API availability checks

- Data consistency validation

- Duplicate detection reporting

- Change tracking and notifications

**Enterprise Enhancements**

**7. Integration Framework**

Framework components:

- Generic API integration class

- Configurable field mappings

- Support for multiple choice lists

- Batch processing capabilities

**8. Backup and Recovery**

Backup strategy:

- Export current choice list before updates

- Store backups in attachment or separate table

- One-click rollback functionality

- Change audit trail

**9. Performance Optimization**

Optimization areas:

- Batch insert operations

- Parallel API calls for different endpoints

- Caching mechanisms

- Database indexing considerations

**Security Improvements**

**10. Enhanced Security**

Security measures:

- Input sanitization for all API data

- Certificate pinning for API calls

- API key support for premium endpoints

- Rate limiting and throttling

**11. Compliance Features**

Compliance considerations:

- GDPR compliance for country data

- Data retention policies

- Change approval workflows

- Audit logging requirements

**Operational Improvements**

**12. Monitoring and Alerting**

Monitoring capabilities:

- Script execution success/failure alerts

- API availability monitoring

- Data quality metrics dashboard

- Performance trend analysis

**13. User Interface Enhancements**

UI improvements:

- Admin configuration interface

- Real-time sync progress indicator

- Country data preview before import

- Manual country addition/editing

**14. Documentation and Testing**

Documentation needs:

- API integration test suite

- Performance benchmarking tools

- User acceptance testing procedures

- Disaster recovery documentation

**Implementation Priority**

**Phase 1 (Critical)**

1. Enhanced error handling
2. Data validation
3. Backup functionality

**Phase 2 (Important)**

1. Incremental updates
2. Configuration management
3. Performance optimization

**Phase 3 (Nice-to-have)**

1. Multi-language support
2. Monitoring dashboard
3. Advanced UI features

**Cost-Benefit Analysis**

**Low-effort, High-impact**

* Enhanced error handling
* Basic data validation
* Simple backup mechanism

**Medium-effort, High-impact**

* Incremental update system
* Configuration interface
* Performance optimization

**High-effort, Medium-impact**

* Multi-language support
* Advanced monitoring
* Enterprise framework

These improvements would transform the basic integration into a enterprise-grade solution suitable for production environments with multiple ServiceNow instances and complex requirements.