

M2M Remote SIM Provisioning Report

Generated on: 2025-03-19 15:11:18

1. Process Overview

The M2M Remote SIM Provisioning (RSP) process allows for the remote provisioning and management of embedded SIMs (eUICC) in M2M devices. The implementation follows the GSMA SGP.02 specification and consists of the following key steps:

1. Root CA initialization - Certificate authority setup for secure communication
2. SM-DP and SM-SR setup - Subscription Manager entities initialization
3. eUICC registration - Device registers with SM-SR using PSK-TLS
4. ISD-P creation - Creation of security domain for profile installation
5. Key establishment - Secure ECDH key exchange for end-to-end encryption
6. Profile preparation - SM-DP prepares the profile data package
7. Profile installation - SM-SR delivers and installs profile on eUICC
8. Profile enabling - Newly installed profile is enabled on the eUICC

2. Performance Measurements

The following table shows the time taken for each step of the process:

| Process Step | Time (seconds) | Bottleneck |
|----------------------|----------------|------------|
| Registration | 2.500 | No |
| ISD-P Creation | 1.500 | No |
| Key Establishment | 3.000 | No |
| Profile Preparation | 8.500 | Yes |
| Profile Installation | 2.000 | No |
| Profile Enabling | 1.500 | No |
| Total Process Time | 19.000 | |

2.1 Traditional Bottleneck Analysis

The following steps were identified as bottlenecks in the M2M RSP process (taking more than 20% of the total process time):

- Profile Preparation: 8.500s (44.7% of total time)

2.2 Enhanced Bottleneck Analysis

The following steps exceeded the fixed bottleneck threshold of 5.0s:

| Process Name | Duration (s) | Entity | Threshold (s) | Excess (s) |
|---------------------|--------------|--------|---------------|------------|
| Profile Preparation | 8.50 | SM-DP | 5.00 | 3.50 |

Bottleneck Summary:

- Total Processes: 6
- Bottleneck Count: 1
- Average Duration: 3.16s
- Maximum Duration: 8.50s
- Minimum Duration: 1.50s

3. Connectivity and System Diagnostics

3.1 Component Status

| Component | Status | Response Time |
|-----------|--------|---------------|
| SM-DP | Online | 2.060 seconds |
| SM-SR | Online | N/A |
| eUICC | Online | N/A |

3.2 Detailed Process Timeline

| Process | Entity | Duration (s) | Status |
|-----------------------------------|--------|--------------|---------|
| eUICC Registration | eUICC | 2.500 | success |
| ISD-P Creation | SM-SR | 1.500 | success |
| ECDH Key Establishment | eUICC | 3.000 | success |
| Profile Preparation | SM-DP | 8.500 | success |
| Profile Download and Installation | eUICC | 2.000 | success |
| Profile Enabling | SM-SR | 1.500 | success |