

# Smart Cities R5 Test

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## Introduction

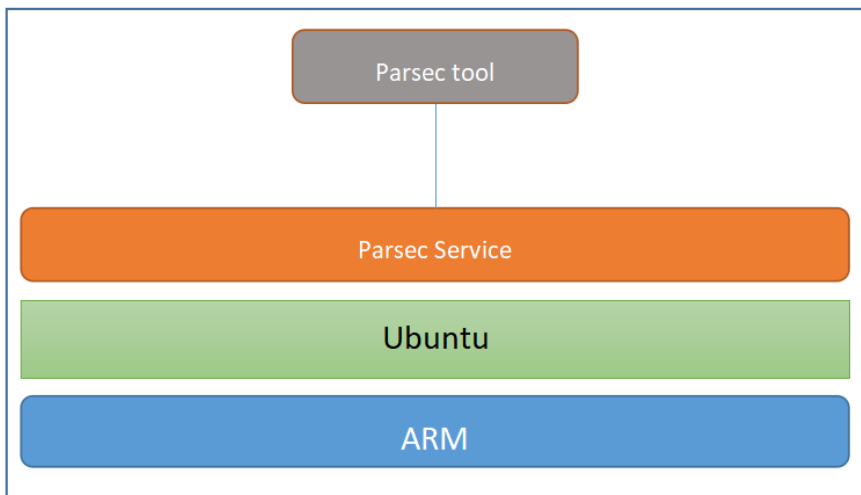
This document covers Test Deployment Environment and Test Case Result for PARSEC on Smart Cities Blueprint.

## Akarino Test Group Information

N/A

## Overall Test Architecture

Parsec Service and Parsec tool are Installed on the same machine. Use Parsec tool to connect and test Parsec server.



## Software Version

Ubuntu 18.04 LTS

parsec-service 0.8.0

parsec-tool 0.3.1

## Devices Under Test

Amazon AWS ARM64 servers

CPU: Model name: Neoverse-N1

CPU(s): 2

BogoMIPS: 243.75

Mem: 8Gb

## Parsec Service Unit Test

### 1.Start Parsec Service

```
cd cassini/smartcities/parsec
```

```
cargo build --release --features "mbed-crypto-provider,direct-authenticator"
```

```
RUST_LOG=info ./target/release/parsec -c e2e_tests/provider_cfg/mbed-crypto/config.toml
```

### 2.Config parsec.sock path

```
export PARSEC_SERVICE_ENDPOINT=unix:/tmp/parsec.sock
```

### 3.Start Unit test

```
cd e2e_tests
```

```
cargo test --features mbed-crypto-provider normal_tests
```

### 4.Test result

**running 125 tests**

```
test per_provider::normal_tests::aead::aead_encrypt_ccm_decrypt ... ok
test per_provider::normal_tests::aead::aead_encrypt_ccm_decrypt_not_equal ... ok
test per_provider::normal_tests::aead::aead_encrypt_ccm_encrypt ... ok
test per_provider::normal_tests::aead::aead_encrypt_ccm_encrypt_decrypt ... ok
test per_provider::normal_tests::aead::aead_encrypt_ccm_encrypt_not_equal ... ok
test per_provider::normal_tests::aead::aead_not_supported ... ok
test per_provider::normal_tests::aead::simple_aead_encrypt_ccm ... ok
test per_provider::normal_tests::asym_encryption::asym_decrypt_no_key ... ok
test per_provider::normal_tests::asym_encryption::asym_decrypt_not_permitted ... ok
test per_provider::normal_tests::asym_encryption::asym_encrypt_and_decrypt_rsa_pkcs ... ok
test per_provider::normal_tests::asym_encryption::asym_encrypt_decrypt_rsa_pkcs_different_keys ... ok
test per_provider::normal_tests::asym_encryption::asym_encrypt_no_key ... ok
test per_provider::normal_tests::asym_encryption::asym_encrypt_not_permitted ... ok
test per_provider::normal_tests::asym_encryption::asym_encrypt_not_supported ... ok
test per_provider::normal_tests::asym_encryption::asym_encrypt_verify_decrypt_with_rsa_crate ... ok
```

test per\_provider::normal\_tests::asym\_encryption::asym\_encrypt\_verify\_decrypt\_with\_rsa\_crate\_oaep ... ok

test per\_provider::normal\_tests::asym\_encryption::asym\_encrypt\_wrong\_algorithm ... ok

test per\_provider::normal\_tests::asym\_encryption::asym\_verify\_decrypt\_with\_internet ... ok

test per\_provider::normal\_tests::asym\_encryption::simple\_asym\_decrypt\_oaep\_with\_salt ... ok

test per\_provider::normal\_tests::asym\_encryption::simple\_asym\_encrypt\_rsa\_oaep ... ok

test per\_provider::normal\_tests::asym\_encryption::simple\_asym\_encrypt\_rsa\_pkcs ... ok

test per\_provider::normal\_tests::asym\_sign\_verify::asym\_sign\_and\_verify\_rsa\_pkcs ... ok

test per\_provider::normal\_tests::asym\_sign\_verify::asym\_sign\_no\_key ... ok

test per\_provider::normal\_tests::asym\_sign\_verify::asym\_verify\_fail\_ecc\_sha256 ... ok

test per\_provider::normal\_tests::asym\_sign\_verify::asym\_verify\_no\_key ... ok

test per\_provider::normal\_tests::asym\_sign\_verify::asym\_verify\_with\_rsa\_crate ... ok

test per\_provider::normal\_tests::asym\_sign\_verify::fail\_verify\_hash2\_ecc ... ok

test per\_provider::normal\_tests::asym\_sign\_verify::fail\_verify\_hash2\_rsa ... ok

test per\_provider::normal\_tests::asym\_sign\_verify::fail\_verify\_hash\_ecc ... ok

test per\_provider::normal\_tests::asym\_sign\_verify::fail\_verify\_hash\_rsa ... ok

test per\_provider::normal\_tests::asym\_sign\_verify::only\_verify\_from\_internet ... ok

test per\_provider::normal\_tests::asym\_sign\_verify::private\_sign\_public\_verify ... ok

test per\_provider::normal\_tests::asym\_sign\_verify::sign\_hash\_bad\_format\_rsa\_sha256 ... ok

test per\_provider::normal\_tests::asym\_sign\_verify::sign\_hash\_not\_permitted ... ok

test per\_provider::normal\_tests::asym\_sign\_verify::sign\_hash\_not\_permitted\_ecc ... ok

test per\_provider::normal\_tests::asym\_sign\_verify::sign\_message\_not\_permitted ... ok

test per\_provider::normal\_tests::asym\_sign\_verify::sign\_verify\_hash\_ecc ... ok

test per\_provider::normal\_tests::asym\_sign\_verify::sign\_verify\_message\_ecc ... ok

test per\_provider::normal\_tests::asym\_sign\_verify::simple\_sign\_hash\_ecdsa\_sha256 ... ok

test per\_provider::normal\_tests::asym\_sign\_verify::simple\_sign\_hash\_rsa\_sha256 ... ok

test per\_provider::normal\_tests::asym\_sign\_verify::simple\_verify\_hash\_ecc ... ok

test per\_provider::normal\_tests::asym\_sign\_verify::simple\_verify\_hash\_rsa ... ok

test per\_provider::normal\_tests::asym\_sign\_verify::verify\_ecc\_with\_ring ... ok

test per\_provider::normal\_tests::asym\_sign\_verify::verify\_hash\_bad\_format\_rsa ... ok

test per\_provider::normal\_tests::asym\_sign\_verify::verify\_hash\_not\_permitted\_ecc ... ok

test per\_provider::normal\_tests::asym\_sign\_verify::verify\_hash\_not\_permitted\_rsa ... ok

test per\_provider::normal\_tests::asym\_sign\_verify::verify\_message\_not\_permitted ... ok

test per\_provider::normal\_tests::asym\_sign\_verify::verify\_with\_ring ... ok

test per\_provider::normal\_tests::auth::delete\_wrong\_key ... ok

test per\_provider::normal\_tests::auth::two\_auths\_same\_key\_name ... ok

test per\_provider::normal\_tests::basic::authenticator\_not\_registered ... ok

test per\_provider::normal\_tests::basic::flags\_ignored ... ok

test per\_provider::normal\_tests::basic::invalid\_accept\_type ... ok

test per\_provider::normal\_tests::basic::invalid\_auth\_len ... ok

test per\_provider::normal\_tests::basic::invalid\_authenticator ... ok

test per\_provider::normal\_tests::basic::invalid\_body\_len ... ok

test per\_provider::normal\_tests::basic::invalid\_content\_type ... ok

test per\_provider::normal\_tests::basic::invalid\_opcode ... ok

test per\_provider::normal\_tests::basic::invalid\_provider ... ok

test per\_provider::normal\_tests::basic::reserved\_fields\_not\_zero1 ... ok

test per\_provider::normal\_tests::basic::reserved\_fields\_not\_zero2 ... ok

test per\_provider::normal\_tests::basic::status\_ignored ... ok

test per\_provider::normal\_tests::create\_destroy\_key::create\_and\_destroy ... ok

test per\_provider::normal\_tests::create\_destroy\_key::create\_and\_destroy\_ecc ... ok

test per\_provider::normal\_tests::create\_destroy\_key::create\_destroy\_and\_operation ... ok

test per\_provider::normal\_tests::create\_destroy\_key::create\_destroy\_twice ... ok

test per\_provider::normal\_tests::create\_destroy\_key::create\_twice ... ok

test per\_provider::normal\_tests::create\_destroy\_key::destroy\_without\_create ... ok

test per\_provider::normal\_tests::create\_destroy\_key::failed\_created\_key\_should\_be\_removed ... ok

test per\_provider::normal\_tests::create\_destroy\_key::generate\_public\_rsa\_check\_modulus ... ok

test per\_provider::normal\_tests::export\_key::check\_export\_ecc\_not\_possible ... ok

test per\_provider::normal\_tests::export\_key::check\_export\_rsa\_not\_possible ... ok

test per\_provider::normal\_tests::export\_key::check\_export\_rsa\_possible ... ok

test per\_provider::normal\_tests::export\_key::check\_rsa\_export\_format ... ok

test per\_provider::normal\_tests::export\_key::export\_ecc\_private\_key ... ok

test per\_provider::normal\_tests::export\_key::export\_key ... ok

test per\_provider::normal\_tests::export\_key::export\_key\_not\_supported ... ok

test per\_provider::normal\_tests::export\_key::export\_rsa\_private\_key\_matches\_import ... ok

test per\_provider::normal\_tests::export\_key::export\_without\_create ... ok

test per\_provider::normal\_tests::export\_key::import\_and\_export\_ecc\_public\_key\_by\_export\_key\_fn ... ok

test per\_provider::normal\_tests::export\_key::import\_and\_export\_rsa\_public\_key ... ok

test per\_provider::normal\_tests::export\_public\_key::check\_export\_ecc\_public\_possible ... ok

test per\_provider::normal\_tests::export\_public\_key::check\_export\_rsa\_public\_possible ... ok

test per\_provider::normal\_tests::export\_public\_key::check\_public\_ecc\_export\_format ... ok

test per\_provider::normal\_tests::export\_public\_key::check\_public\_ecc\_export\_format2 ... ok

test per\_provider::normal\_tests::export\_public\_key::check\_public\_rsa\_export\_format ... ok

test per\_provider::normal\_tests::export\_public\_key::export\_ecc\_public\_key ... ok

test per\_provider::normal\_tests::export\_public\_key::export\_rsa\_public\_key ... ok

test per\_provider::normal\_tests::export\_public\_key::export\_without\_create ... ok

test per\_provider::normal\_tests::export\_public\_key::import\_and\_export\_ecc\_public\_key ... ok

test per\_provider::normal\_tests::export\_public\_key::import\_and\_export\_ecc\_public\_key\_by\_export\_public\_key\_fn ... ok

test per\_provider::normal\_tests::export\_public\_key::import\_and\_export\_rsa\_public\_key ... ok

test per\_provider::normal\_tests::generate\_random::generate\_random\_not\_supported ... ok

test per\_provider::normal\_tests::generate\_random::generate\_zero\_bytes ... ok

test per\_provider::normal\_tests::generate\_random::simple\_generate\_random ... ok

test per\_provider::normal\_tests::hash::hash\_compare\_false ... ok  
test per\_provider::normal\_tests::hash::hash\_compare\_ripe\_md160 ... ok  
test per\_provider::normal\_tests::hash::hash\_compare\_sha256 ... ok  
test per\_provider::normal\_tests::hash::hash\_compare\_sha512 ... ok  
test per\_provider::normal\_tests::hash::hash\_compute\_ripe\_md160 ... ok  
test per\_provider::normal\_tests::hash::hash\_compute\_sha256 ... ok  
test per\_provider::normal\_tests::hash::hash\_compute\_sha512 ... ok  
test per\_provider::normal\_tests::hash::hash\_not\_supported ... ok  
test per\_provider::normal\_tests::import\_key::check\_format\_import1 ... ok  
test per\_provider::normal\_tests::import\_key::check\_format\_import2 ... ok  
test per\_provider::normal\_tests::import\_key::check\_format\_import3 ... ok  
test per\_provider::normal\_tests::import\_key::create\_and\_import\_ecc\_key ... ok  
test per\_provider::normal\_tests::import\_key::create\_and\_import\_rsa\_key ... ok  
test per\_provider::normal\_tests::import\_key::failed\_imported\_key\_should\_be\_removed ... ok  
test per\_provider::normal\_tests::import\_key::import\_ecc\_key ... ok  
test per\_provider::normal\_tests::import\_key::import\_ecc\_key\_twice ... ok  
test per\_provider::normal\_tests::import\_key::import\_ecc\_private\_key ... ok  
test per\_provider::normal\_tests::import\_key::import\_rsa\_key ... ok  
test per\_provider::normal\_tests::import\_key::import\_rsa\_key\_twice ... ok  
test per\_provider::normal\_tests::key\_agreement::key\_agreement\_not\_supported ... ok  
test per\_provider::normal\_tests::key\_agreement::raw\_key\_agreement\_brainpoolpr1 ... ok  
test per\_provider::normal\_tests::key\_agreement::raw\_key\_agreement\_secpr1 ... ok  
test per\_provider::normal\_tests::key\_agreement::raw\_key\_agreement\_two\_generated\_parties ... ok  
test per\_provider::normal\_tests::key\_agreement::simple\_raw\_key\_agreement ... ok  
test per\_provider::normal\_tests::key\_attributes::no\_usage\_flag\_set ... ok  
test per\_provider::normal\_tests::key\_attributes::wrong\_permitted\_algorithm ... ok  
test per\_provider::normal\_tests::key\_attributes::wrong\_type ... ignored  
test per\_provider::normal\_tests::key\_attributes::wrong\_usage\_flags ... ok  
test per\_provider::normal\_tests::ping::mangled\_ping ... ok  
test per\_provider::normal\_tests::ping::test\_ping ... ok

test result: ok. 124 passed; 0 failed; 1 ignored; 0 measured; 31 filtered out; finished in 14.21s

## Parsec Tool Test

### 1.Keep Parsec Service running

### 2.Build Parsec Tool

git clone <https://github.com/parallaxsecond/parsec-tool.git>

cd parsec-tool

cargo build

### 3.Set Parsec socket path

```
export PARSEC_SERVICE_ENDPOINT=unix:/tmp/parsec.sock
```

### 4.Test Ping

```
./target/debug/parsec-tool ping
```

```
[INFO ] Service wire protocol version
```

```
1.0
```

### 5.Test list-providers

```
./target/debug/parsec-tool list-providers
```

```
[INFO ] Available providers:
```

```
ID: 0x01 (Mbed Crypto provider)
```

```
Description: User space software provider, based on Mbed Crypto - the reference implementation of the PSA crypto API
```

```
Version: 0.1.0
```

```
Vendor: Arm
```

```
UUID: 1c1139dc-ad7c-47dc-ad6b-db6fdb466552
```

```
ID: 0x00 (Core provider)
```

```
Description: Software provider that implements only administrative (i.e. no cryptographic) operations
```

```
Version: 0.8.0
```

```
Vendor: Unspecified
```

```
UUID: 47049873-2a43-4845-9d72-831eab668784
```

### 6.Test create key

```
./target/debug/parsec-tool create-ecc-key -k Jack
```

```
[INFO ] Creating ECC key...
```

```
[INFO ] Key "Jack" created.
```

### 7.Test list key

```
./target/debug/parsec-tool list-keys
```

```
[INFO ] Available keys:
```

```
* Jack (Mbed Crypto provider, EccKeyPair { curve_family: SecpR1 }, 256 bits, permitted algorithm: AsymmetricSignature(Ecdsa { hash_alg: Specific (Sha256) })))
```

### 8.Test sign with key

```
./target/debug/parsec-tool sign -k Jack "This is Parsec Sign!"
```

```
[INFO ] Hashing data with Sha256...
```

```
[INFO ] Signing data with Ecdsa { hash_alg: Specific(Sha256) }...
```

```
MEQCIAlQjPyGuQ4d3KRT1m9RMJaKacn0wBnHaQQxFSZm3lQuAiBjQZqO6ofdfCwOeQCPhk4/lwuOFANKE2Ek/xEiBeruFg==
```

### 9.Test export public key

```
./target/debug/parsec-tool export-public-key -k Jack
```

```
-----BEGIN PUBLIC KEY-----
```

```
BOH0eSSx72xRLXBa6jAGlaq9EIV0ufRKdOz41C8R1DSV8Bi1AkXbNrYhOKTMV6X
```

S4GwiXgSThdHIPi01bsaHwM=  
-----END PUBLIC KEY-----

10.Test delete key

./target/debug/parsec-tool delete-key -k Jack  
[INFO ] Deleting a key...  
[INFO ] Key "Jack" deleted.

Test Dashboards

Single pane view of how the test score looks like for the Blue print.

Total Tests	Test Executed	Pass	Fail	In Progress
1	1	1	0	0

Additional Testing

N/A

Bottlenecks/Errata

N/A