emdha Time Stamping Authority (TSA) CA – Certificate Policy and Certificate Practice Statement (CP/CPS)

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1.0	25-Mar-2021	Sivaraman Natrajan	- First official issue – Time Stamping Authority
1.1	18-Mar-2026	Bala Murali Krishnan	- No Changes w.r.to policy and practices. - Regular review, Updated Reviewer and Approver details

	Reviewer	Approver
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Title	Vice President	Chairman - Policy Authority Committee
Date	18-MAR-2026	18-MAR-2026

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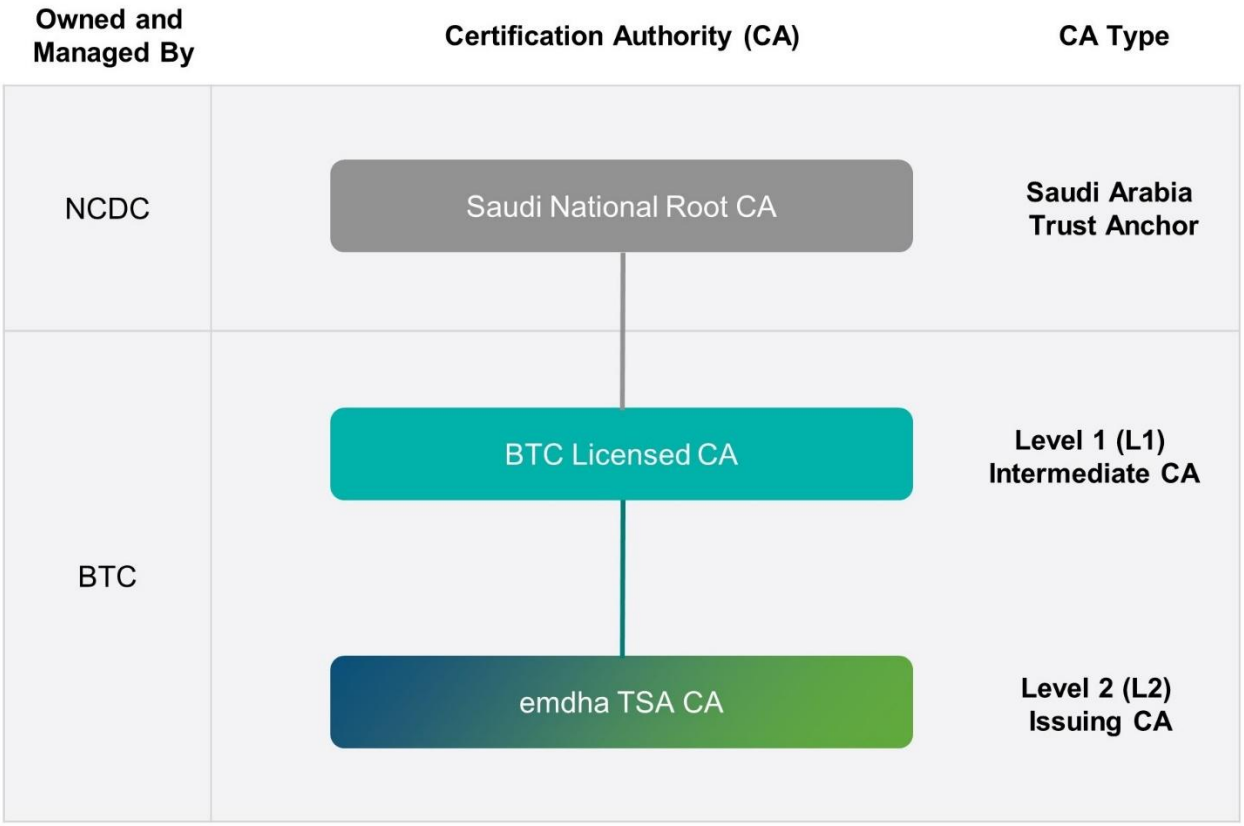
1. Introduction

Baud Telecom Company is licensed by Communications and Information Technology Commission (CITC) and National Centre for Digital Certification (NCDC) to build, own and operate a commercial licensed CA in the Kingdom of Saudi Arabia. For more information on NCDC, please refer to https://www.ncdc.gov.sa CA acts as a "Certification Service Provider", as defined under the definition of Article 1(21) of Kingdom's e-Transactions Law. The Digital Certificates issued by BTC LICENSED CA provides legal validity for its electronic signature, under the definitions of Article 1(17) of Kingdom's e-Transactions Law.

The e-Transactions Law of Kingdom of Saudi Arabia grants legal recognition to digital / electronic signatures. This provides that "If a signature is required for any document or contract or the like, such requirement shall be deemed satisfied by an electronic signature generated in accordance with this Law. The electronic signature shall be equal to a handwritten signature, having the same legal effects."



BTC Licensed Certification Authority (henceforth referred as BTC LICENSED CA) is owned by the Baud Telecom Company (referred as BTC). BTC LICENSED CA is a Certification Authority under the Saudi National Root CA. This is achieved by obtaining a digitally signed CA certificate issued by Saudi National Root CA owned and operated by National Centre for Digital Certification (NCDC) that validates BTC LICENSED CA and authenticates the associated Public Key. BTC LICENSED CA will issue the emdha TSA CA and any future L2 CAs.

BTC Licensed CA or BTC PKI or emdha TSP or emdha CA or emdha are used interchangeably which includes all Intermediate CA, Issuing CAs and Affiliates of BTC.
emdha Time Stamping Authority Certification Authority (henceforth referred as emdha TSA CA) refers to the CA entity directly under the BTC LICENSED CA, owned and operated by BTC, and is approved by National Centre for Digital Certification (NCDC) to be part of the Saudi National Public Key Infrastructure (PKI). This is achieved by the BTC Licensed CA issuing a digitally-signed CA Certificate that authenticates the Public Key of the emdha TSA CA.

"EMDHA TSP" is a registered entity owned by Baud Telecom Company, and is intended to be used as the name/trademark for BTC Certification services and Trust services.

emdha TSA CA provides trust services to secure the exchange of information between key stakeholders. Participants include government and its various agencies, autonomous and semi-autonomous public institutions, citizens, residents and businesses. emdha TSA CA shall provide certificates to both emdha trust services and its subscribers.

1.1. Overview

This document combines the CP and CPS documents and is thus presented as a single document.
This document defines a high level of trust and assurance for use by all emdha TSA CA PKI participants. It provides definitions for the policies by which emdha TSA CA operates.

This document also establishes the processes and procedures followed by the emdha TSA CA to:

- Certificate issuance, management and revocation for supportive administrative roles for the emdha TSA CA operations,
- Manage core infrastructure that supports BTC PKI setup,
- Maintain or revoke certificates issued by the emdha TSA CA, and
- Operate the OCSP responder(s)

This CP and CPS comply with:

- BTC LICENSED CA CP and CPS.
- Internet Request for Comment "RFC 3647" of Internet Engineering Task Force (IETF) for Certificate Policy and Certification Practice Statement.
- Adobe Approved Trust List (AATL)/Microsoft Certificate policies.
- Internet Request for Comment "RFC 5280" of Internet Engineering Task Force (IETF) for Internet X.509 Public Key Infrastructure Certificate and Certificate Revocation List (CRL) Profile.
- Internet Request for Comment "RFC 3161" of Internet Engineering Task Force (IETF) for Internet X.509 Public Key Infrastructure Certificate Time-Stamp Protocol (TSP).

If any inconsistency exists between this CP/CPS and aforementioned references, then the references take precedence over this CP/CPS.

This document is subject to regular review by the BTC Policy Authority committee (BTC PAC), as specified in section 1.3.1 of this CP/CPS, and subject to amendment as well as exceptions to mitigate material, imminent impacts to subscribers, partners, relying parties, and/or others within the

certificate ecosystem where practical workarounds do not exist. Such exceptions are tracked, documented and reported as part of the audit process.

Under the descriptions provided in this CP/CPS, emdha TSA CA establishes a hierarchical trust under the BTC LICENSED CA, which is an intermediate CA under the Saudi National Root CA.

It is the responsibility of all parties applying for or using a digital certificate issued under this CP/CPS, to read this CP/CPS to understand the practices established for the lifecycle management of the certificates issued by the emdha TSA CA. Any application for digital certificates or reliance on emdha TSA CA issued certificates signifies understanding and acceptance of this CP/CPS and its supporting policy documents.

emdha TSA CA is a Level-2 Issuing CA in the Saudi National PKI hierarchy, maintained and operated by BTC in an online environment.

1.1.1 Certificate Policy

This Certificate Policy document is assigned the OID: 2.16.682.1.101.5000.1.4.1.1.4. This OID will not be included as a certificate policy extension in CA certificates. Specific OIDs will be assigned to each certificate type in Appendix A, which will be included as a certificate policy extension in each certificate issued by the emdha TSA CA.

1.1.2 Relationship between the CP and the CPS

This document combines the CP and CPS documents and is thus presented as a single document. It states what assurance can be placed in a certificate issued by emdha TSA CA. It also states how emdha TSA CA meets the requirements for policies defined in this document.

This CP/CPS establishes the practices for the issuance, acceptance, maintenance, use, reliance upon, revocation of Time Stamping Unit (TSU) certificate issued by emdha TSA CA as governed by this document and related documents which describe Saudi National PKI requirements and use of Certificates.

1.1.3 Interaction with other PKIs

emdha TSA CA shall not cross-certify with other BTC or third-party CAs. emdha TSA CA will not issue any subordinate CA under itself.

1.1.4 Scope

This CP/CPS applies to all certificates issued by the emdha TSA CA. emdha TSA CA is a Level-2 issuing CA in the Saudi National PKI hierarchy, maintained and operated by BTC in an online environment. The emdha TSA CA shall issue TSU certificates and Certificate Revocation Lists (CRLs) only for emdha TSP Timestamping Operations and supportive functions for the emdha TSA CA operations.

1.2. Document Name and Identification

The OID assigned to BTC by NCDC is: {joint-iso-itu-t(**2**) country(**16**) sa(**682**) sa-organizations(**1**) government-organizations(**101**) ncdc(**5000**) pki-public-key-infrastructure(**1**) licensed-cas(**4**) certificate-policies(**1**) baud-telecom-company-btc(**1**)}

The object identifier (OID) values corresponding to the organization and CP/CPS are as follows:

Entity / Certificate Policy	OID
Baud Telecom Company (BTC)	2.16.682.1.101.5000.1.4.1.1
emdha TSA CA Certificate Policy Document	2.16.682.1.101.5000.1.4.1.1.4
emdha TSA CA OCSP Certificate	2.16.682.1.101.5000.1.4.1.1.4.2

emdha TSA organizes its OID arcs for the various Certificates described in this CP/CPS as per the table "Certificate Types"

Certificate Types

Sl No	Certificate Type	Certificate Policy OID
1.	emdha TimeStamping Unit (TSU) Certificate	2.16.682.1.101.5000.1.4.1.1.4.1

1.3. PKI Participants

The following are the PKI Participants under the emdha TSA Certification Authority CP/CPS.

1.3.1 BTC Policy Authority Committee (BTC PAC)

BTC Policy Authority Committee (BTC PAC) is responsible for the governance of the BTC LICENSED CA and emdha TSA CA. Its members are appointed by BTC. Its tasks include:

- Establishing and implementing its CP and CPS for CAs under its domain, in conjunction with the Saudi National PKI Policy document;
- Reviewing and approving BTC PKI policies and other policies related to certification services and trust services;
- Ensuring the operation of the BTC CAs comply with the requirements of its CP and CPS and Operations Policies and Procedures;
- Review and approve the various Agreements necessitated for the CA's specific business requirements, namely, SIP Agreement, Subscriber Agreement, Organization Agreement, Relying Party Agreement and other related Agreements;
- Review the compliance of internal audits, external audits and any security assessments;
- Seeking resolution of disputes between participants operating in its domain;
- Act as liaison with NCDC;
- Perform an annual review on key algorithms and lengths to determine appropriate level of security and assurance;
- Obtain NCDC approval for Issuing CAs under BTC Licensed CA;
- Approval of Issuing CAs under BTC Licensed CA;
- Manage and approve all MAJOR changes within the BTC PKI environment;
- Approve annual third-party penetration testing;
- Review vulnerability testing and vulnerability assessment reports;
- Reviews all operational documents once annually or as per the business requirements;
- Act as "Trusted Role" according to the assignations in the "Trusted Roles" document.

1.3.2 BTC Licensed Certification Authority (BTC LICENSED CA)

The term BTC LICENSED CA refers to the entity owned and operated by BTC which is approved by NCDC to join the Saudi National PKI, directly under the Saudi National Root CA.

BTC LICENSED CA is responsible for:

- Generation and issuance of "Issuing CA" certificates under the BTC LICENSED CA;
- Publication of Issuing CA certificates;
- Revocation of Issuing CA certificates;
- Publication of revocation information;
- Re-key of Issuing CAs;
- Conduct regular internal security audits;
- Assist in audits conducted by or on behalf of NCDC; and
- Performance of all aspects of the services, operations and infrastructure related to BTC LICENSED CA.

1.3.3 emdha Time Stamping Authority Certification Authority (emdha TSA CA)

The term emdha TSA CA refers to the CA entity owned and operated by BTC which is approved by NCDC to join the Saudi National PKI, directly under the BTC LICENSED CA.

emdha TSA CA is responsible for:

- Generation of Timestamping Unit (TSU) Certificates, and supporting services certificates under the emdha TSA CA;
- Revocation or/and suspension of Timestamping Unit (TSP) Certificates and related trust service certificates, and supporting services certificates;
- Publication of revocation or/and certificate status information
- Conduct regular internal security audits;
- Assist in audits conducted by or on behalf of NCDC and/or WebTrust for CAs related audits; and
- Performance of all aspects of the services, operations and infrastructure related to emdha TSA CA.

1.3.4 Trust Services

Trust Services are electronic services that consume digital certificates to provide capabilities for certificate-based authentication, digital signatures, verification, validation and/or preservation for electronic transactions. Trust Services provide and/or enhance integrity, reliability and trust in electronic transactions.

1.3.4.1 Time-Stamp Authority (TSA)

TSA service provides an RFC 3161 compliant digitally-signed timestamp token whose signer vouches for the existence of the signed document, transaction or content at a certain point in time by recording their digitally signed fingerprint along with the date and time the transaction occurred. This service asserts that the data and/or associated secure hash existed at the specified time.

This service will be consumed by emdha's signature services for time-stamping transactions.

Time-stamping of transactions also allows for the transaction to be considered valid beyond the expiration of the subscriber certificate.

The TSA shall use a reliable time source whose clock is synchronized as per global best-practices. The TSA shall ensure time synchronization is performed at least once every 24 hours and ensure time drift is within 1 second of UTC time.

1.3.4.1.1 Request Format

Stamp requests must be in accordance with the syntax of the "RFC 3161 Time Stamp Protocol (TSP)" specification, following the format specified in section 2.4.1 Request Format.

The supported algorithms will be SHA-256, SHA-384 and SHA-512.

The time stamping service URL will be:

- http://tsa.emdha.sa/etsa

The sending format for sending requests will be by HTTP POST request. The content of the request will be in ASN.1 encoded in DER, and must contain the following headers:

- Content type: application/timestamp-query
- Content-length: required

1.3.4.1.2 Response Format

The format of the responses will be via HTTPS. The format of the response content will be in ASN.1, encoded in DER, and will contain the following header:

- Content type: application/timestamp-reply

The answer is according to RFC 3161 section 2.4.2, in particular the contents of the TSTInfo token will contain the following fields:

- TSA: <TSA certificate DN>
- Time stamp: <the date of the stamp>
- Policy OID: 2.16.682.1.101.5000.1.4.1.1.4.1
- Ordering: no
- Hash Algorithm: sha256 (the algorithm is specified by the request)
- Serial number: <certificate's serial number>
- Accuracy: 0x01 seconds, unspecified millis, unspecified micross
- Nonce: unspecified.
- Extensions: <absent>

During the process, emdha:

- Protects the confidentiality and integrity of the registration data provided to it.
- Uses reliable systems and products that are protected against any alteration and that guarantee the technical security and, where appropriate, cryptography of the certification processes that they support.
- Indicates the date and time when a time stamp was issued.

1.3.5 Relying Parties

A Relying Party is an individual or entity that acts in reliance on a Time Stamp Token (TST) generated under this policy by emdha TSA CA. Relying Party may, or may not also be a Subscriber.

TST is a data object that binds a representation of a datum to a particular time, expressed in universal time (UTC), thus establishing evidence that the datum existed at that time.

1.3.6 Online Certificate Status Protocol Responder

Online Certificate Status Protocol (OCSP) Responders provide revocation status information. The emdha TSA CA shall make their certificate status information available through an OCSP responder in addition to any other mechanisms they wish to employ. The emdha TSA CA shall publish status information for the certificates it issues in a Certificate Revocation List (CRL).

1.3.7 Subscribers

Subscribers for emdha TSA CA are the Time-stamp Units (TSUs). emdha TSA CA shall issue a certificate to a TSU to sign the timestamp that shall be embedded in the end-user certificate issued by emdha eSign CA.

1.4. Certificate Usage

1.4.1 Appropriate Certificate Uses

emdha TSA CA certificates issued under this CP/CPS may be used as defined by certificate extensions on key usage and extended usage.

1.4.2 Prohibited Certificate Uses

Certificates issued under this CP shall not be authorized for use in any circumstances listed below, and the emdha TSA CA shall not be liable for any claims arising from such use.

emdha TSA CA certificates are not for use in circumstances where:

1. Usage of certificate is in connection to any activity, which is illegal under the laws of Kingdom of Saudi Arabia.
2. Usage of certificate is inconsistent with the certificate extensions in key usage and extended key usage, as defined by RFC 5280.
3. Usage of certificate is above the designated reliance limits, if applicable.
4. Usage of certificate is for any equipment operated in hazardous conditions or under fail proof conditions (for example, Nuclear facilities, aircraft navigation, medical devices, direct life support devices, other systems where any failure could lead to injury, death or environmental damage, etc.)

5. Usage of certificates is in connection with fraud, pornography, obscenity, hate, defamation, harassment and other activity that is contrary to public policy.
6. Usage for man-in-the-middle (MITM) or traffic management of domain names or IPs that the certificate holder does not legitimately own or control.

emdha TSA CA certificates do not guarantee that the Subject is trustworthy, operating a reputable business or that the equipment into which the Certificate has been installed is free from defect, malware or virus.

emdha TSA CA certificates should be used only for the designated purposes, in addition to specific types and categories. An end subscriber certificate should not be used for CA function, like, to issue/sign a certificate under it. Similarly, the CA certificates are to be used only for CA function, and not to perform any end subscriber usage like document signing, etc.

More generally, certificates shall be used only to the extent where use is consistent with all applicable laws, statutes, orders, decrees, rules, regulations, and court judgements of this jurisdiction or governmental order of Kingdom of Saudi Arabia.

1.5. Policy Administration

1.5.1 Administration Organization

This CP/CPS is administered by BTC Policy Authority Committee (see section 1.3.1).

1.5.2 Contact Person

Queries regarding emdha TSA CA CP/CPS shall be directed to:

Email: policy@emdha.sa
Telephone: +966-11-4663000
Fax: +966-11-4613311

Any formal notices required by this CP/CPS shall be sent in accordance with the notification procedures specified in section 9.12.2 of this CP/CPS.

1.5.3 Person Determining CP Suitability for the Policy

The BTC PAC is responsible for approving the emdha TSA CA CP/CPS and establishing that the it conforms to the intended requirements in accordance with policies and procedures specified by Saudi National PKI.

1.5.4 CP/CPS Approval

Changes or updates to the emdha TSA CA CP/CPS document shall be made in accordance with the stipulations of Saudi e-Transactions act and bylaws and are subject to BTC PAC approval, as well as NCDC Approval.

1.6. Definitions and Acronyms

The terms used in this document shall have the meanings as defined in emdha TSA CA Glossary section which can be found at https://www.emdha.sa/.

2. Publication and Repository Responsibilities

2.1. Repositories

emdha TSA CA certificate(s), TSU Certificate(s) and issued revocation lists will be published in repositories. emdha TSA CA shall operate high-availability repositories to support emdha TSA CA's operations. The repositories shall be available for public internet access through HTTP and HTTPS on a 24x7 basis.

2.1.1 Repository Obligations

Repositories shall support:

- Appropriate standard-based access protocols;
- Availability of the information as required by the certificate information posting and retrieval stipulations of this CP/CPS; and
- Access control mechanisms, when necessary to protect the repository availability and information.

2.2. Publication of Certification Information

2.2.1 Publication of Certificates and Certificate Status

emdha TSA CA shall publish in the appropriate repository: CA Certificates and CRLs.
CAs shall provide relying parties with information on how to find the appropriate repository to check certificate status and OCSP within each issued certificate.

2.2.2 Publication of CA Information

This CP/CPS shall be made available to all emdha TSA CA PKI participants at https://www.emdha.sa. This website is the only source for up-to-date documentation and emdha TSA CA reserves the right to publish newer versions of the documentation without prior notice.

Additionally, emdha TSA CA will publish an approved, current and digitally signed version of the emdha TSA CA CP/CPS.

The information published through this website resource is the only authoritative source for:

- Production CA Certificates;
- The certificate revocation list (CRL) for emdha TSA CA;
- CP/CPS Document.
- Relying Party Agreements.

2.2.3 Interoperability

Pointers to repository information in CA and end entity Certificates shall only contain valid Uniform Resource Identifiers (URIs) that are accessible by relying parties. The extensions containing such URIs shall comply to the RFC 5280 specifications.

2.3. Time or Frequency of Publication

CA Certificates are published promptly following their generation and issuance. CRL information shall be published as set in section 4.9.7.

This CP/CPS shall be reviewed and/or updated at least annually. This CP/CPS and any subsequent changes shall be made available to the participants as set forth in section 2.2.2 within 15 days of approval by the BTC PAC and NCDC.

This CP/CPS is provided as public information on emdha TSA CA official website https://www.emdha.sa. Public documents are only valid if they are published as a PDF, digitally signed by the PAC.

The OCSP responder(s) will immediately report a certificate that has been revoked as set in section 4.9.9.

2.4. Access Controls on Repositories

The information published in emdha TSA CA online repository is publicly accessible information and, has been provided with unrestricted read-only access to the contents of the repository. emdha TSA CA shall put in place sufficient safeguards, logical and physical, to prevent any unauthorized write access or alteration/modification of repository entries.

3. Identification and Authentication

3.1. Naming

3.1.1. Types of Names

Each Certificate must have a unique identifiable Distinguished Name (DN) according to the X.500 standard. Each Subscriber certificate shall contain an X.501 distinguished name in the Subject name field. Naming convention for emdha TSA CA is approved by the BTC PAC and NCDC as part of the CP/CPS approval.

3.1.2. Need for names to be meaningful

Timestamping Certificates issued pursuant to this CP/CPS are meaningful only if the names that appear in the certificates are understood, usable and meaningful for the Relying Parties. The common name in a certificate shall refer to the generally accepted legal name of the organization, a unit within an organization, any name legally owned or assigned to the organization.

The subject name contained in a emdha TSA CA certificate must be meaningful and be sufficiently discernable to unambiguously indicate the association existing between the name and the entity to which it belongs.

The emdha TSA CA DN (LDAP Notation) in the Issuer field of all certificates and CRLs that are issued will be:
CN=EMDHA TSA CA, O=Baud Telecom Company, C=SA

The certificate types supported by emdha TSA CA are covered in Certificate Types under Appendix-A.

3.1.3. Anonymity or Pseudonymity of Subscribers

No Stipulation for anonymous names for subscribers.

3.1.4. Rules for Interpreting Various Name Forms

The naming convention used by emdha TSA CA is ISO/IEC 9594 (X.500) Distinguished Name (DN).

3.1.5. Uniqueness of Names

Distinguished names shall be unique across the emdha TSA CA for a specific type of certificate. It is possible to have two or more certificates with the same Subject Distinguished Name (DN). emdha TSA CA may, if necessary, insert additional numbers or letters to the Certificate Holder's Subject Common Name, or other attribute, in order to distinguish between two Timestamping Certificates that would otherwise have the same Subject Name.

3.1.6. Recognition, Authentication, and Role of Trademarks

Certificate applicants are prohibited from using names in their certificate application that infringe upon the Intellectual Property Rights of others. The emdha TSA CA however, does not verify whether a certificate applicant has Intellectual Property Rights in the name appearing in a certificate application.

Any name collisions or disputes regarding Certificates issued by emdha TSA CA shall be resolved as per BTC Complaint and Dispute Resolution Policy.

emdha TSA CA shall have the right to revoke an unexpired certificate upon receipt of a properly authenticated order from NCDC, an arbitrator or court of competent jurisdiction requiring the revocation of a Certificate or Certificates containing a Subject name in dispute.

Where permitted or required, the use of a trademark is reserved to the holder of that trademark.

3.2. Initial Identity Validation

3.2.1. Method to Prove Possession of Private Key

The subscriber private key shall be generated only in FIPS 140-2 Level-2 or Level-3 certified hardware security module(s).

The possession of the private key, corresponding to the public key (which has to be listed in the certificate), must be demonstrated by the certificate applicant, by submitting a PKCS #10 (CSR) request signed using the private key.

For signature keys, this requirement shall not apply where the key pair is generated by emdha TSP within a secured PKI environment, on behalf of the Subscriber, after due authentication by the Subscriber.

3.2.2. Authentication of Issuer Identity

No Stipulation

3.2.3. Identity-Proofing of Individual Identity

3.2.3.1. Identity-Proofing of End User Subscribers

emdha TSA CA shall issue certificates internally within the organization for its supporting roles, such as TSU, OCSP, etc. BTC PAC will verify information in the application, authenticity of the requesting representative and the representative's authorization to act in the assigned role.

3.2.3.2. Identity-Proofing of Device Subscribers

No stipulation

3.2.3.3. Identity-Proofing of Organizational Entities

When TSU(s) are named as certificate subjects it will have a organization as sponsor. emdha TSA CA will authenticate the identity of the organization applying for the TSU certificate However, since the TSA service shall be only for internal consumption by emdha, the certificate application request from emdha PAC, as sponsor, shall suffice .

TSA service will be an internal service and only be consumed by emdha for it's eSign services. The PAC shall be the sponsor for the TSA service for emdha.

3.2.4. Non-verified Subscriber Information

No stipulation.

3.2.5. Criteria of Interoperation

No stipulation.

3.3. Identification and Authentication for Re-key Requests

Re-key of certificates of emdha TSA CA is not applicable.

3.3.1. Identification and Authentication for Routine Re-Key

No stipulation.

3.3.2. Identification and Authentication for Re-key After Revocation

No stipulation.

3.4. Identification and Authentication for Revocation Requests

A request to revoke Keys and TSU Certificates may be submitted by the authorized personnel, namely the Trusted Roles or/and PAC of emdha to do so under emdha PAC instructions.

Revocation of Certificates for emdha TSA CA supporting roles such as OCSP, etc. may be performed as stipulated in the CA Operations Manual.

4. Certificate Life-Cycle Operational Requirements

Communication among the CA, RA, and subscriber are implemented with requisite security services (i.e., source authentication, integrity, non-repudiation, or confidentiality) that commensurate with the assurance level of the certificate being managed.

4.1. Certificate Application

4.1.1. Submission of Certificate Application

emdha PAC shall submit the application for TSU Certificate to TSA CA.

4.1.2. Enrollment Process and Responsibilities

Since the TSA service is only for internal consumption by emdha, the TSU certificate shall be issued by TSA CA once the application is received from the PAC and approved by TSA CA.

4.2. Certificate Application Processing

4.2.1. Performing Identity-proofing Functions

Please refer to above section 3.2.3.3.

4.2.2. Approval or Rejection of Certificate Applications

No stipulation.

4.2.3. Time to Process Certificate Applications

No Stipulation.

4.3. Certificate Issuance

4.3.1. CA Actions During Certificate Issuance

TSU certificates will issued upon the instruction from emdha PAC on FIPS 140-2 Level-2 or Level-3 certified hardware module.

Certificate issuance for emdha TSA CA supporting roles such as OCSP, etc., shall be performed as stipulated in the CA Operations Manual.

4.3.2. Notification to Subscriber of Certificate Issuance

No stipulation.

4.4. Certificate Acceptance

No stipulation.

4.4.1. Conduct Constituting Certificate Acceptance

No stipulation.

4.4.2. Publication of the Certificate by the CA

emdha TSA CAs shall publish a certificate in a suitable repository.

4.4.3. Notification of Certificate Issuance by the CA to Other Entities

No Stipulation.

4.5. Key Pair and Certificate Usage

4.5.1. Subscriber Private Key and Certificate Usage

No stipulation.

4.5.2. Relying Party Public Key and Certificate Usage

The Relying Party (RP) Agreement becomes effective when the RP relies on information provided by the emdha TSA CA or a subscriber regarding a specific transaction that the RP uses to accept or reject their participation in the transaction. The RP's use of the Repository, or any CRL or OCSP services is governed by the RP Agreement and emdha TSA CA CP/CPS. The RP is solely responsible for deciding whether or not to rely on the information in a certificate provided by emdha TSA CA.

Relying Parties must also at the minimum must assess:

- The use of digital certificate is not prohibited by this CP/CPS.
- The appropriateness of the use of the Digital Certificate for any given purpose
- That the Digital Certificate is being used in accordance with its Key-Usage field extensions.
- That the Digital Certificate is valid at the time of reliance by reference to Online Certificate Status Protocol or Certificate Revocation List Checks.

The RP bears the legal consequences of any failure to comply with the obligations set in the RP agreement or the aforementioned steps.

4.6. Certificate Renewal

Certificate renewal is the issuance of a new certificate by generating the new key pair, validity period and serial number.

4.6.1. Circumstances for Certificate Renewal

Certificates are renewed by CA only if the public key has not reached the end of its validity period, the associated private key has not been compromised

4.6.2. Who may Request a Certificate Renewal

A request for renewal may be presented by emdha PAC in whose name the keys have been issued. All requests for renewal must be authenticated by the CA, as per section 3.2.3.3.

4.6.3. Processing Certificate Renewal Requests

A request for renewal must be authenticated in the same manner as initial registration, as per section 3.2.3.3.

4.6.4. Notification of the new certificate to the subscriber

emdha TSA CAs shall publish a certificate in a suitable repository.

4.6.5. Conduct constituting acceptance of the certificate

The approved request for and use of the certificate by a TSU constitutes acceptance of a certificate and all obligations associated with its use as described in this CP/CPS.

4.6.6. Publication of the certificate by the CA

emdha TSA CAs shall publish a certificate in a suitable repository.

4.6.7. Notification of certificate issuance by the CA to other entities

No stipulation

4.7. Certificate Re-Key

Re-key of certificates of emdha TSA CA is not applicable.

4.7.1. Circumstances for Certificate Re-key

No stipulation.

4.7.2. Who can Request a Certificate Re-key

No stipulation.

4.7.3. Processing Certificate Re-keying Requests

No stipulation.

4.7.4. Notification of Re-Keyed Certificate Issuance to Subscriber

No stipulation.

4.7.5. Conduct Constituting Acceptance of a Re-keyed Certificate

No stipulation.

4.7.6. Publication of the Re-keyed Certificate by the CA

No stipulation.

4.7.7. Notification of Certificate Issuance by the CA to Other Entities

No stipulation.

4.8. Certificate Modification

emdha TSA CA shall not support any forms of Certificate modification. In the event of certificate modification, the existing certificate shall be revoked and a new certificate shall be issued.

4.9. Certificate Revocation and Suspension

emdha TSA CA shall revoke certificates when the private key associated with the certificate is compromised or suspected to be compromised or when any of the information on a certificate changes or becomes obsolete.

4.9.1. Circumstance for Revocation of a Certificate

The following reasons identify the need for a certificate to be revoked:

- Contravened any provisions of the Saudi e-Transactions Act and Bylaws made there under;
- The Subject has failed to meet its obligations under this CP/CPS or any other applicable Agreements, regulations, or laws;
- BTC PAC determines that revocation of a Certificate is in the best interest of Saudi National PKI;
- BTC PAC determines that a Certificate was not issued correctly in accordance with this CP/CPS;

- The private key corresponding to the public key in the certificate has been lost, disclosed without authorization, stolen or compromised in any way;
- There has been an improper or faulty issuance of a certificate due to:
  - A material prerequisite to the issuance of the Certificate not being satisfied;
  - A material fact in the Certificate is known, or reasonably believed, to be false.
- BTC PAC requests revocation of TSU or emdha TSA CA supporting roles such as OCSP, etc.;

4.9.2. Who Can Request Revocation of a Certificate

The following entities can request revocation of a certificate:

- NCDC can request the revocation of any certificate issued by emdha TSA CA;
- BTC PAC can request the revocation of any certificates issued under its authority;
- emdha TSA CA can request the revocation of certificate issued to emdha TSA CA supporting roles such as TSA OCSP, etc.;
- A legal, judicial or regulatory agency in Saudi Arabia, within applicable laws and in coordination with BTC PAC.

If any request for revocation cannot be resolved, the request is subject to the Complaint and Dispute Resolution process described in the BTC Complaints and Dispute Resolution Policy.

4.9.3. Procedure for Revocation Request

A request to revoke a certificate shall identify the certificate to be revoked, explain the reason for revocation, and allow the request to be authenticated (e.g., digitally or manually signed).
Detailed procedure for revocation of emdha TSA CA supporting roles such as OCSP, etc. is provided in the CA Operations Manual.

4.9.4. Revocation Request Grace Period

Revocation request grace period is not permitted once a revocation request has been verified and approved.

4.9.5. Time within which CA must Process the Revocation Request

emdha TSA CA shall process authorized revocation requests within seven days.

4.9.6. Revocation Checking Requirements for Relying Parties

Relying Parties should comply with the signature validation requirements defined in the Relying Party Agreement.

4.9.7. CRL Issuance Frequency

emdha TSA CA will publish its CRLs at least once every eight days, and immediately at the time of any Certificate revocation.

4.9.8. Maximum Latency of CRLs

CRLs shall be published in the Repositories within 30 minutes of Certificate revocation. Certificate status information is updated within 60 minutes of certificate revocation.

4.9.9. Online Revocation Checking Availability

emdha TSA CA shall make CRLs available in repositories as described in section 2.1.
emdha TSA CA shall also provide access to an OCSP Responder covering the certificates they issue.

4.9.10. Online Revocation Checking Requirements

emdha TSA CA shall make its Certificate status information available through an OCSP responder.

4.9.11. Other Forms of Revocation Advertisements Available

emdha TSA CA shall not provide other forms of revocation advertisements.

4.9.12. Special Requirements Related to Key Compromise

emdha TSA CA discovers, or has a reason to believe, that there has been a compromise of the private key of the emdha TSA CA, it will immediately declare a disaster and invoke emdha TSA CA business continuity plan.

emdha TSA CA will,

(1) determine the scope of certificates that must be revoked,
(2) publish a new CRL at the earliest feasible time,
(3) use reasonable efforts to notify NCDC, subscribers and potential relying parties that there has been a key compromise, and
(4) generate new CA key pair, subject to approval from BTC PAC.

4.9.13. Circumstances for Certificate Suspension

No stipulation.

4.9.14. Who Can Request Suspension

No stipulation.

4.9.15. Procedure for Suspension Request

No stipulation.

4.9.16. Limits on Suspension Period

No stipulation.

4.9.17. Circumstances for Terminating Suspended Certificates

No stipulation.

4.9.18. Procedure for Terminating the Suspension of a Certificate

No stipulation.

4.10. Certificate Status Services

The status of public certificates is available from CRLs in the repositories and via OCSP responder(s). Revocation entries on a CRL or OCSP response shall not be removed until after the expiry of the revoked certificate.

4.11. End of Subscription

No stipulation.

4.12. Key Escrow and Recovery

4.12.1. Key Escrow Policy and Practices

Not applicable.

4.12.2. Session Key Encapsulation and Recovery Policy and Practices

Not applicable.

5. Facility Management and Operational Controls

5.1. Physical Security Controls

emdha operates the emdha TSA CA and Repositories at Tier III qualified data center, with appropriate physical and procedural access controls for all hardware and software sub-systems used in the issuance and revocation of certificates. emdha limits access to sensitive CA zones to personnel in Trusted Roles (see section 5.2.1 of this CP/CPS).

emdha TSA CA is co-located in a third-party data center and follows the physical security requirements specified as below:

- Permit only authorized access to the hardware;
- Store all removable media and paper containing sensitive plain-text information in secure containers;
- Monitor, either manually or electronically, for unauthorized intrusion at all times; and
- Maintain and periodically inspect access logs.

A security check of the facility housing the CAs equipment shall occur on a regular basis.

5.1.1. Site Location and Construction

The location and construction of the facility housing the emdha TSA CA equipment is consistent with facilities used to house high value, sensitive information. The site location and construction, when combined with other physical security protection mechanisms such as guards and multi-factor access controls, provides robust protection against unauthorized access to the CA equipment and records.

Main Site (Primary) Location: Riyadh, Saudi Arabia
Alternate Site (DR Site) Location: Al Khobar, Saudi Arabia (400+ KMs away from Main Site)

5.1.2. Physical Access

BTC PKI systems are protected by at least four zones of physical security, with access to the lower zone required before gaining access to the higher and more secure zone(s). Progressively restrictive physical access privileges control access to each zone. Sensitive CA operational activity, any activity related to the lifecycle of the certification process such as authentication, verification, and issuance, occur within very restrictive physical zones. Physical access is automatically logged and video recorded. Additionally, zones enforce individual access control through the use of two factor authentication, one of them being

biometric. Unescorted personnel, including un-trusted employees or visitors, are not allowed into such secured areas unless accompanied by trusted personnel.

Main Site is protected by seven zones of physical security. More details are provided in the Physical Security Documentation.

emdha TSA CA has implemented policies and procedures to ensure that the physical environments in which the emdha TSA CA systems are installed maintain a high level of security:

- CA systems are installed in a secure facility that is isolated from outside networks, with all access controlled;
- CA is separated into a series of progressively secure areas; and
- The entrances and exits from the secure areas are under constant video surveillance and all systems that provide authentication, as well as those that record entry, exit and network activity, are in secured areas.

The security techniques employed are designed to resist a large number and combination of different forms of attack. The mechanisms used include:

- Perimeter alarms
- Closed circuit television
- Electronic access controls using two-factor authentication
- Multi-person access for most secure zones
- Human guards

To prevent tampering, cryptographic hardware is stored in the most secure area of the BTC/emdha PKI datacenter, with access limited to authorized personnel.
Human guards continually monitor the facility housing the CA equipment on a 24x7x365 basis. The BTC/emdha PKI datacenter facility is never left unattended.

The security mechanisms employed are commensurate with the level of threat in the equipment environment.

5.1.3. Power and Air Conditioning

Power to the BTC/emdha PKI datacenter is delivered through 2 different active-active feeds. Sufficient power capacity is available to the datacenter. Sufficient resilience is available in the Tier III datacenter using battery backup and N+1 generator to provide sufficient time to respond and act on any power related events.

The cooling system is designed as N+1 according to uptime institute's tier 3 requirements. Sufficient monitoring for cooling systems is in place to ensure optimum cooling is available to the aisle/rack level.

5.1.4. Water Exposure

emdha TSA CA shall ensure that CA equipment is installed such that it is not in danger of exposure to water (e.g., on elevated floors).

5.1.5. Fire Prevention and Protection

The CA equipment is housed in a facility with appropriate fire suppression and protection systems. Some of the measures deployed include:

- Fire-resistant walls and pillars;
- Modern FM-200 fire suppression systems to detect and suppress fire with appropriate 24x7 monitoring
- The controls implemented comply meet all applicable safety regulations of the Kingdom of Saudi Arabia.

5.1.6. Media Storage

emdha TSA CA shall ensure that CA media is stored so as to protect it from accidental damage (such as water, fire, electromagnetic, etc.). Media that contains archive or backup information is duplicated in an alternate location with reasonable distance between the two sites.

5.1.7. Waste Disposal

Sensitive media and documentation that are no longer needed for operations are destroyed using appropriate disposal processes. For example, sensitive paper documentation is shredded, burned, or otherwise rendered unrecoverable. HSM and related devices are physically destroyed or zeroized in accordance with the manufacturers' guidance prior to disposal. Other electronic media is physically destroyed prior to disposal.

5.1.8. Off-Site Backup

Full system backups of CAs, sufficient to recover from system failure, shall be made on a periodic schedule as per procedures approved by BTC PAC.

5.2. Procedural Controls

5.2.1. Trusted Roles

A trusted role is one whose incumbent performs functions that can introduce security problems if not carried out properly, whether accidentally or maliciously. The people selected to fill these roles must be extraordinarily responsible or the integrity of the PKI is weakened. The functions performed in these roles form the basis of trust for all uses of the emdha TSA CA.

Trusted roles and personnel assigned to each trusted role are defined in the BTC Trusted Roles document.

5.2.2. Number of Persons Required per Task

emdha TSA CA shall ensure separation of duties for critical CA functions to prevent one person from maliciously using the PKI systems without detection. Each user's system access is limited to those actions which are required to fulfill their responsibilities.

A single person may be sufficient to perform tasks associated with a role, except for the activation of the CA's signing Private Key. Activation of the CA's signing Private Key shall require actions by at least two individuals. Two-role-authorization, split-knowledge and ownership techniques such as split-password's and M-Of-N tokens shall be deployed to perform any critical CA signing key operations, key backup or key recovery operation.

5.2.3. Identity-proofing for Each Role

An individual shall identify and authenticate himself before being permitted to perform any actions set forth above for that role or identity.

5.2.4. Separation of Roles

Role separation, when required, may be enforced either by the CA equipment, or procedurally, or by both means.

Separation of roles is identified in the BTC Trusted Roles document.

5.3. Personnel Controls

5.3.1. Background, Qualifications and Experience Requirements

All persons filling trusted roles shall be selected on the basis of skills, experience, loyalty, trustworthiness, and integrity. The requirements governing the qualifications, selection and oversight of individuals who operate, manage, oversee, and audit the CA are set forth in the BTC Trusted Roles document.

While performing any critical operation, one of the trusted roles should be held by a Saudi Citizen.

5.3.2. Background Check and Clearance Procedures

emdha TSA CA conducts background investigations for all CA personnel (trusted roles) positions. Background check shall take into account the following:

- A check (for completeness and accuracy) of the applicant's CV;
- Independent identity check (National ID card, Passport or similar document);
- Availability of satisfactory character reference, i.e. one business and one personal;
- Confirmation of claimed academic and professional qualifications;
- Interviews with references shall be done as required; and
- Security clearance.

Security clearance shall be repeated every 3 years for personnel holding trusted roles.

5.3.3. Training Requirements

emdha TSA CA shall ensure that all personnel receive appropriate training. Such training shall address relevant topics such as PKI and Information security concepts, security requirements, operational responsibilities and associated procedures.

The RA and CA Officers engaged in Certificate issuance shall be given detailed training to perform their tasks. emdha TSA CA shall design examination based on the training which is to be qualified by each CA Officer.

Documentation of all personnel who received training and the level of training completed shall be maintained by the emdha TSA CA.

5.3.4. Retraining Frequency and Requirements

Individuals responsible for PKI roles are made aware of changes in the CA operation. Any significant change to the operations shall have a training/awareness plan, and the execution of such plan shall be documented.

emdha TSA CA shall review and update its training program at least once every two years to accommodate changes in the CA system.

5.3.5. Job Rotation Frequency and Sequence

No stipulation.

5.3.6. Sanctions for Unauthorized Actions

emdha TSA CA shall take appropriate administrative and disciplinary actions against personnel who perform unauthorized actions (i.e., not permitted by the CP/CPS and/or other procedures) involving the CA or its associated components.

5.3.7. Contracting Personnel Requirements

emdha TSA CA may employ independent contractors as may be necessary. When independent contractors are employed, they will be subjected to the same process, procedures and controls as prescribed in this document under 'Personnel Controls'.

5.3.8. Documentation Supplied to Personnel

emdha TSA CA will make available to its personnel its CP/CPS, and any relevant documents required to perform their jobs competently and satisfactorily.

5.4. Audit Logging Procedures

emdha TSA CA will implement and maintain Trustworthy Systems to preserve an audit trail for material events and for key life cycle management, including key generation, backup, storage, recovery, destruction and management of cryptographic devices, the CA and OCSP Responder.

5.4.1. Types of Events Recorded

emdha TSA CA shall ensure recording in audit log files all events relating to the security of the CA system hosted in its data center. All security audit capabilities of the CA operating system and CA applications shall be enabled. Such events include, but are not limited to:

1. CA key lifecycle management events, including:
    a. Key generation, backup, storage, recovery, archival, and destruction; and
    b. Cryptographic device lifecycle management events.
2. CA and Subscriber Certificate lifecycle management events, including:
    a. Certificate requests, renewal, and re-key requests, and revocation;
    b. All verification activities stipulated in these Requirements and the CA's Certification Practice Statement;
    c. Date, time, phone number used, persons spoken to, and end results of verification telephone calls;
    d. Acceptance and rejection of certificate requests;
    e. Issuance of Certificates; and
    f. Generation of Certificate Revocation Lists and OCSP entries.

3. Security events, including:
    a. Successful and unsuccessful PKI system access attempts;
    b. PKI and security system actions performed;
    c. Security profile changes;
    d. System crashes, hardware failures, and other anomalies;
    e. Firewall and router activities; and
    f. Entries to and exits from the CA facility.

Log entries MUST include the following elements:

- Date and time of entry;
- Identity of the person making the journal entry; and
- Description of the entry.

All logs, whether electronic or manual, must contain the date and time of the event and the identity of the Entity which caused the event. The CA shall also collect, either electronically or manually, security information not generated by the CA system such as:

- Physical access logs;
- System configuration changes and maintenance;
- CA personnel changes;
- documentation relating to certificate requests and the verification;
- documentation relating to certificate revocation;
- Discrepancy and No compromise reports;
- Information concerning the destruction of sensitive information;
- Current and past versions of all Certificate Policies;
- Current and past versions of Certification Practice Statements;
- Vulnerability Assessment Reports;
- Threat and Risk Assessment Reports;
- Compliance Inspection Reports; and
- Current and past versions of Agreements.

5.4.2. Frequency of Processing Data

Audit logs are required to be processed in accordance with Audit Trails and Verification mentioned in the IT Security policies and procedure manual.

5.4.3. Retention Period for Security Audit Data

emdha TSA CA shall retain all system generated (electronic) and manual audit records onsite for a period not less than six months from the date of creation.

Video recording of CA facility access will be retained for a minimum of 90 days.

5.4.4. Protection of Security Audit Data

emdha TSA CA shall protect the electronic audit log system and audit information captured electronically or manually from unauthorized viewing, modification, deletion or destruction. This can be achieved by:

- Read access to the journal information is granted to personnel requiring this access as part of their duties;

- Only authorized roles can obtain access; and
- The journal is stored in appropriate database and access to the database is protected against unauthorized access by the application and through special security measures on the operating system level.

5.4.5. Security Audit Data Backup Procedures

emdha TSA CA shall back up all audit logs and audit summaries. Detailed policy and standard operating procedures are provided in IT Security Policies and Procedures Manual.

5.4.6. Security Audit Collection System (Internal or External)

The audit collection system is detailed in IT Security Policies and Procedures Manual.

5.4.7. Notification to Event-Causing Subject

Event-causing subject are not notified.

5.4.8. Vulnerability Assessments

Vulnerability assessments of security controls shall be performed by emdha TSA CA for its CA and other supporting systems hosted in its data center at least every three months, and after any significant system or network changes as determined by the CA. Such assessments shall be performed on public and private addresses for the emdha TSA CA and associated components.

emdha TSA CA security program shall include an annual Risk Assessment which includes identification of foreseeable internal and external threats, assess the likelihood and potential damage of these threats and assess the sufficiency of the policies, procedures, information systems and technology. Based on the Risk Assessment exercise, emdha TSA CA shall develop, implement, and maintain a security plan to control the risks identified during the Risk Assessment, commensurate with the sensitivity of the Certificate Data and Certificate Management Processes.

Apart from this BTC/emdha PKI datacenter(s) are constantly (24x7) monitored, and all attempts to gain unauthorized access to any of the services are logged and analyzed.

BTC/emdha performs third party penetration testing on public IPs for hosted CA infrastructure at least once a year and after infrastructure or application upgrades or modifications that the CA determines are significant.

5.5. Records Archival

5.5.1. Types of Events Archived

CA archive records shall be sufficiently detailed to establish the proper operation of the CA, or the validity of any certificate (including those revoked or expired) issued by the CA.

These include:

- Audit logs generated by the CA software;
- Agreements;
- Records pertaining to identification and authentication information;
- Physical access logs;

- System configuration changes and maintenance;
- CA personnel changes;
- Discrepancy and compromise reports;
- Information concerning the destruction of sensitive information;
- Current and past versions of Certificate Policies and Certification Practice Statements;
- Vulnerability Assessment Reports, and associated remediation reports;
- Threat and Risk Assessment Reports;
- Compliance Inspection Reports;
- Documents identifying all personnel who received CA related training and the level of training completed;
- emdha TSA CA shall archive any necessary keys and passwords for a period of time sufficient to support the functionalities; and

The CA shall make these audit logs available to its Qualified Auditor upon request.

5.5.2. Retention Period for Archive

emdha TSA CA's minimum retention period for archive data is established at 10 years.
Applications needed to process the archive data shall also be maintained for the archival retention period.

5.5.3. Protection of Archive

Only authorized individuals shall be permitted to review the archive. The contents of the archive shall not be released except as determined by BTC PAC, or as required by law. Records and material information relevant to use of, and reliance on, a certificate shall be archived. Archive media shall be stored in a secure storage facility separate from the component itself. Any secondary site must provide adequate protection from environmental threats such as temperature, humidity and magnetism.

5.5.4. Archive Backup Procedures

Backup of archive is detailed in IT Security Policies and Procedures Manual.

5.5.5. Requirements for Time-Stamping of Records

Certificates, CRLs, and other revocation database entries shall contain time and date information obtained from the BTC/emdha PKI time-server(s). System logs shall be time stamped and all connected systems shall use a dedicated time server to maintain synchronized time.

The system time of all servers is synchronized with official time-source. BTC/emdha PKI time-source is also synchronized with the GPS clock as a backup. Further, there is a procedure in place that checks and corrects drift in the real time clock.

5.5.6. Archive Collection System (Internal or External)

The type of Archive Collection System, whether internal or external, is specified in IT Security Policies and Procedures Manual.

5.5.7. Procedures to Obtain and Verify Archive Information

As specified in IT Security Policies and Procedures Manual.

5.6. Key Changeover

The CA system utilized by the emdha TSA CA supports key rollover, allowing CA keys to be changed periodically, as required. This may be done to minimize risk to the integrity of the emdha TSA CA or based on business requirements for certificate validity period of its subscribers. Once changed the new key is used for certificate signing purposes.

The unexpired older keys are used to sign CRL's until all certificates signed by the unexpired older private key have expired. Old and unexpired CA signing keys, if retained for signing CRLs shall be protected just as the new key.

5.7. Compromise and Disaster Recovery

5.7.1. Incident and Compromise Handling Procedures

If emdha TSA CA suspects or detects a potential hacking attempt or other form of compromise to the CA, it shall perform an investigation in order to determine the nature and the degree of damage. If the CA key is suspected of compromise, the procedures outlined in CA Operations Manual shall be followed. Otherwise, the scope of potential damage shall be assessed in order to determine if the CA needs to be rebuilt, only some certificates need to be revoked, and/or the CA key needs to be declared compromised.

BTC PAC shall be notified in case of:

- Suspected or detected compromise of the CA system;
- Physical or electronic attempts to penetrate the CA system;
- Denial of Service attacks on a CA system component;
- Any incident preventing the CA from issuing a CRL within 24 hours of the time specified in the next update field of its currently valid CRL.

5.7.2. Computing Resources, Software, and/or Data Are Corrupted

emdha TSA CA maintains backup copies of hardware, system, databases, and private keys in order to rebuild the CA capability in case of software and/or data corruption. Such procedures require appropriate escalation, incident investigation, and incident response. If necessary, Business Continuity procedures will be enacted.

5.7.3. CA Private Key Compromise Recovery Procedures

Recovery procedure is as specified in CA Operations Manual.

5.7.4. Business Continuity Capabilities after a Disaster

emdha TSA CA has developed robust Business Continuity Management System for critical PKI services to provide the minimum acceptable level of assurance to its subscriber for service availability.

All emdha TSA CA critical infrastructure equipment at the primary site have built-in hardware fault-tolerance, and configured to be highly available with auto-failover switching. emdha TSA CA currently maintains copies of backup media and infrastructure system software, which include but are not limited to: PKI services related critical data; database records for all certificates issued and audit related data, at its offsite business continuity and disaster recovery storage facilities.

emdha TSA CA Business Continuity Management System (BCMS) demonstrates the capability to restore or recover critical PKI services at the primary site within twenty-four (24) hours in the event of service(s) non-availability.

Business Continuity Management components at emdha TSA CA are being regularly tested, verified, and updated to be operational to address crisis situation in the event of a disruption. For security reasons details of these plans are not publicly available.

emdha TSA CA business continuity plan includes:

- Conditions for activating the plan;
- Emergency procedures;
- Fall-back procedures;
- Resumption procedures;
- A maintenance schedule for the plan;
- Awareness and education requirements;
- The responsibilities of the individuals;
- Recovery time objective (RTO);
- Regular testing of contingency plans;
- The CA's plan to maintain or restore the CA's business operations in a timely manner following interruption to or failure of critical business processes;
- A requirement to store critical cryptographic materials (i.e., secure cryptographic device and activation materials) at an alternate location;
- Acceptable system outage and recovery time;
- Procedure and frequency of backup to be taken for essential business information and software; and
- Procedures for securing its facility to the extent possible during the period of time following a disaster and prior to restoring a secure environment either at the original or a remote site.

emdha TSA CA has developed recovery plans to mitigate the effects of any kind of natural, man-made or equipment failure related disaster.

emdha TSA CA has implemented an alternate recovery site as per industry standards to provide full recovery of critical PKI services within five days following a disaster at the primary site. emdha TSA CA Business Continuity Policy contains further details.

5.8. CA or RA Termination

5.8.1. CA Termination

No Stipulation.

5.8.2. RA Termination

No Stipulation.

6. Technical Security Controls

6.1. Key Pair Generation and Installation

6.1.1. Key Pair Generation

Key pair generation for CAs will be witnessed and attested to by a party separate from the Trusted Roles. Key Pair generation must be performed using trustworthy systems and processes that provide the required cryptographic strength of the generated keys, and prevent the loss, disclosure, modification, or unauthorized use of such keys. CA's shall use Hardware Security Modules (HSMs) for CA key generation and storage. HSM's shall be minimum FIPS 140-2 Level 3 validated.

emdha TSA CA key pair generation is performed by multiple trusted personnel using trustworthy systems and processes that provide security and required cryptographic strength for the generated keys.

emdha TSA CA key pair is generated in pre-planned Key Generation Ceremony. The activities performed in Key Generation Ceremony are video recorded, dated and signed by all individuals involved. These records are kept for audit and tracking purposes for a length of time deemed appropriate by BTC PAC.

6.1.2. Private Key Delivery to Subscriber

No stipulation.

6.1.3. Public Key Delivery to Certificate Issuer

No stipulation.

6.1.4. CA Public Key Delivery to Subscribers and Relying Parties

emdha TSA CA shall ensure that Subscribers and Relying Parties receive and maintain the trust anchor (Saudi National Root CA) in a trustworthy fashion. Methods for trust anchor delivery may include:

- A trusted role loading the trust anchor onto Tokens delivered to Subscribers via secure mechanisms;
- Distribution of trust anchor through secure out-of-band mechanisms;
- Calculation and comparison of trust anchor hash or fingerprint against the hash made available via authenticated out-of-band sources; or
- Downloading trust anchor from websites secured with a currently valid certificate of equal or greater assurance level than the Certificate being downloaded and the site trust anchor already on the Subscriber system via secure means.
- Availability of CA certificate(s) in public repositories as described in section 2.1.

emdha TSA CA certificate(s) shall be published on the website https://www.emdha.sa which may be downloaded by subscribers or relying parties.

6.1.5. Key Sizes

Key pairs shall be of sufficient length to prevent others from determining the key pair's private key using cryptanalysis during the period of expected utilization of such key pairs. Key sizes are described as below for emdha TSA CA. All FIPS-approved signature algorithms shall be considered acceptable. Acceptable algorithms shall be maintained in accordance with the Saudi National PKI Policy.

All certificates issued shall use at least 4096-bit RSA keys OR at least NIST P-256 ECC keys, with Secure Hash Algorithm version (SHA-256) in accordance with FIPS 186-2 or equivalent.

TLS or other protocol providing similar security to accomplish any of the requirements of this CP/CPS shall use AES (minimum 128-bit key strength) for symmetric keys, and at least 4096-bit RSA or at least NIST P-256 ECC or equivalent for asymmetric keys.

The current emdha TSA CA key lengths for minimum key sizes are;

- emdha TSA CA Key Pair: RSA 4096 bits
- OCSP Key Pair: RSA 4096 bits
- TSU Key Pair: RSA 4096 bits or NIST P-256 ECC

6.1.6. Public Key Parameters Generation and Quality Checking

The HSM pseudo-random number generator is validated by NIST. Public key parameters prescribed are generated in accordance with industry best practices.

6.1.7. Key Usage Purposes

emdha TSA CA private key(s) shall be used for certificate and CRL signing.

6.2. Private Key Protection and Crypto-Module Engineering Controls

6.2.1. Cryptographic Module Standards and Controls

Cryptographic modules employed in emdha TSA CA shall comply with FIPS-PUB 140-2 “Security Requirements for Cryptographic Modules”. The Hardware Security Modules (HSM’s) used for key generation meet the requirements of FIPS 140-2 Level 3 to store the CA keys.

Cryptographic hardware used for subscriber key generation shall be at least FIPS 140-2 Level 2 compliant.

6.2.2. CA Private Key Multi-Person Control

Multi-person control of CA private key is achieved using an “m-of-n” split key knowledge scheme. emdha TSA CA keys can only be accessed on the physical and logical level by at least two trusted roles, and is achieved by M=2 in M-of-N scheme.

6.2.3. Private Key Escrow

Not Applicable.

6.2.4. Private Key Backup

6.2.4.1. Backup of CA Signing Private Key

emdha TSA CA signing Private Key shall be backed up under the same multi-person control as the original Signing Private Key. A second and third copy may be kept at CA backup locations for Business Continuity and Disaster Recovery. Procedures for emdha TSA CA signing Private Key backup shall be detailed in Backup and Restore Policy.

emdha TSA CA private keys that are physically transported from one facility to another shall remain confidential and maintain their integrity.

emdha TSA CA hardware containing CA private keys, and associated activation materials, shall be transported in a physically secure environment by authorized personnel in trusted roles, using multiple person controls, and using sealed tamper-evident packaging.

emdha TSA CA keys and associated activation materials shall be transported in a manner that prevents the key from being activated or accessed during the transportation event; and CA key transportation events shall be logged.

6.2.4.2. Backup of Subscriber Private Keys

No stipulation.

6.2.5. Private Key Archival

emdha TSA CA shall maintain controls to provide reasonable assurance that archived CA keys remain confidential, secured, and shall never be put back into production.

6.2.6. Private Key Transfer into or from a Cryptographic Module

The cryptographic modules implemented by emdha TSA CA are validated to FIPS 140-2 Level 3 ensuring that the CA keys cannot be exported to less secure media.

emdha TSA CA keys can be cloned for secure backup from the master hardware cryptographic module to other hardware cryptographic module(s) using secure mechanisms so that they can be recovered if a major catastrophe destroys the production set of keys. Such backup or clones shall have the same level of authentication and access control as the production set.

6.2.7. Private Key Storage on Cryptographic Module

CA's Private Key shall be stored on FIPS 140-2 Level 3 validated cryptographic module in encrypted form.

6.2.8. Method of Activating Private Keys

CA's private key shall be activated by the main stakeholders and authorized personnel, as defined in CA Operations Manual, supplying their activation data. Such activation data shall be held on secure media and shall require the successful completion of a multi-person authentication process.

6.2.9. Methods of Deactivating Private Keys

CA's private key shall be deactivated by the main stakeholders and authorized personnel, as defined in CA Operations Manual.

6.2.10. Methods of Destroying Private Keys

Copies of CA private keys shall be destroyed as per Cryptographic Devices Lifecycle Management Policy and Procedure.

6.2.11. Cryptographic Module Rating

As described in section 6.2.1.

6.3. Other Aspects of Key Pair Management

6.3.1. Public Key Archive

The Public Key is archived as part of the certificate archive process.

6.3.2. Certificate Operational Periods and Key Usage Periods

The table below details key usage and certificate lifetime for the corresponding keys:

Key/Certificate	Maximum Validity Period
emdha TSA CA signing key and certificate	120 months or valid not beyond 2029, whichever is earlier
OCSP Certificates	60 Months or valid not beyond 2029, whichever is earlier
TSU Certificate	108 months or valid not beyond 2029, whichever is earlier

All certificates including TSU certificates or any emdha TSA CA supporting role like OCSP etc. certificate end date shall not exceed the end date of its signing certificate (issuer).

6.4. Activation Data

6.4.1. Activation Data Generation and Installation

The CA cryptographic module activation data will be generated locally at the time of key generation by personnel in the trusted role and responsible for controlling the activation data.

6.4.2. Activation Data Protection

Written CA cryptographic module activation data is placed into tamper evident packages which are then stored within secure containers in a highly secured environment inside the BTC PKI Datacenter(s).

6.4.3. Other Aspects of Activation Data

No stipulation.

6.5. Computer Security Controls

6.5.1. Specific Computer Security Technical Requirements

The computer security functions may be provided by the operating system, or through a combination of operating system, software, and physical safeguards.

At a minimum, the datacenter(s) shall have following controls to ensure security of the systems:

- Hardened operating system;
- Software packages are only installed from a trusted software repository;
- Minimal network connectivity;
- Authentication and authorization for all functions;
- Strong authentication and role-based access control for all vital functions;
- Disk and/or file encryption for all relevant data; and
- Proactive patch management.

6.5.2. Computer Security Rating

No stipulation.

6.6. Life-Cycle Security Controls

6.6.1. System Development Controls

emdha TSA CA design, installation, and operation will be documented by qualified personnel. BTC Production personnel, with oversight by the BTC PAC and Quality Assurance team, will develop and produce appropriate qualification documentation establishing that emdha TSA CA components are properly installed and configured, and operate in accordance with the technical specifications.

emdha TSA CA shall undertake reasonable precautions to prevent malicious software being loaded on the CA equipment. Only applications necessary to perform the CA operations shall be implemented. The CA systems and software shall be scanned for malicious code on first use and periodically thereafter.
Hardware and software implementation, including updates and patches are performed by trained and trusted personnel.

6.6.2. Security Management Controls

The configuration of the emdha TSA CA systems as well as any modifications and upgrades shall be documented and controlled. There shall be a mechanism for detecting unauthorized modification to software or configuration. A formal change-management methodology shall be used for on-going maintenance of systems. Appropriate backups shall be taken before and after any major change to systems.

6.6.3. Life Cycle Security Ratings

No stipulation.

6.7. Network Security Controls

emdha TSA CA shall employ appropriate security measures to ensure they are guarded against denial of service and intrusion attacks. Also, it shall employ network security and firewall management, including port restrictions and IP address filtering.
Any boundary control devices used to protect the network on which PKI equipment is hosted shall deny all but the necessary services to the PKI equipment.

BTC/emdha PKI datacenter(s) use a network design of multiple security layers making use of several security technologies including network firewalls, application firewalls, and Endpoint protection technologies to protect network access to on-line CA's, Repository and OCSP Responder equipment.
Access shall not be provided to the emdha TSA CA through the public internet.

6.8. Time Stamping

Time stamping shall be supported for the Certificates, CRLs, and other revocation database entries containing time and date information from dedicated time-server(s) to maintain synchronized time.

Time derived from the time service shall be used for establishing the time of:

- Initial validity time of a Subscriber's Certificate;
- Revocation of a Subscriber's Certificate;
- Posting of CRL updates;
- OCSP response.

7. Certificate, CRL and OCSP Profiles

7.1. Certificate Profile

This section contains the rules and guidelines followed by this CA in populating X.509 certificates and CRL extensions. The Certificate profile for the Subscriber is described in Appendix A.

7.1.1. Version Numbers

emdha TSA CA shall issue X.509 v3 certificates (populate version field with integer "2").

7.1.2. Certificate Extensions

TSU certificates may include any extensions as specified by RFC 5280 in a certificate, but must include those extensions required by this CP/CPS in Appendix A. Any optional or additional extensions shall be non-critical and shall not conflict with the certificate and CRL profiles defined in this CP/CPS.

7.1.3. Algorithm Object Identifiers

emdha TSA CA shall sign Certificates using sha256WithRSAEncryption algorithm (1.2.840.113549.1.1.11).

7.1.4. Name Forms

Certificates issued by emdha TSA CA contain the full X.500 distinguished name of the certificate issuer and certificate subject in the issuer name and subject name fields as per the “Name Types” table below. Distinguished names are in the form of an X.501 printable string.

Name Types

Issuer/Subject Fields	Category	OID	Datatype	Max Length
Common Name	Issuer Field	2.5.4.3	UTF8String	64 Characters
Organization Name	Issuer Field	2.5.4.10	UTF8String	64 Characters
Country Name	Issuer Field	2.5.4.6	Printable String	2 Characters

7.1.5. Name Constraints

No Stipulation.

7.1.6. Certificate Policy Object Identifier

As stated in Appendix A.

7.1.7. Usage of Policy Constraints Extension

It is expected that all members of the emdha TSA CA apply to this policy.

7.1.8. Policy Qualifiers Syntax and Semantics

No stipulation.

7.1.9. Processing Semantics for the Critical Certificate Policy Extension

Processing semantics for the critical certificate policy extension shall conform to X.509 certification path processing rules.

7.2. CRL Profile

Certificate Revocation Lists are issued in the X.509 version 2 format in accordance with RFC 5280. emdha TSA CA CRL Profile is as below:

Field	Content	Comment
Algorithm	**SHA256withRSAEncryption**	
Issuer	**CN= EMDHA TSA CA** **O=BAUD Telecom Company** **C=SA**	
This update	*<issue date>*	
Next update	*<issue date + 8 days>*	Or immediately upon revocation
AuthorityKeyIdentifier	*< emdha TSA CA's Subject Key Identifier>*	
CRL number	*<number>*	

7.2.1. Version Numbers

emdha TSA CA shall issue X.509 version two (v2) CRLs (populate version field with integer "1").

7.2.2. CRL and CRL Entry Extensions

Critical private extensions shall be interoperable in their intended community of use.

7.3. OCSP Profile

OCSP requests and responses shall be in accordance with RFC 6960.

7.3.1. Version Number

The version number for request and responses shall be v1.

7.3.2. OCSP Extensions

No stipulation.

8. Compliance Audit and Other Assessments

The BTC PAC shall be responsible for overseeing compliance of the emdha TSA CA, RAs, emdha TSA CA CP/CPS. BTC PAC shall ensure that the requirements of the emdha TSA CA CP/CPS and the provisions of applicable Agreements are implemented and enforced.

8.1. Frequency of Audit or Assessments

emdha TSA CA shall be subjected to periodic compliance audits which are no less frequent than once a year. emdha TSA CA shall also be performing internal audit at least on a quarterly basis against a randomly selected sample for monitoring adherence and service quality.

8.2. Identity and Qualifications of Assessor

The audit under Saudi National PKI shall be performed by a Qualified Auditor. A Qualified Auditor means a natural person, Legal Entity, or group of natural persons or Legal Entities that collectively possess the following qualifications and skills:

- Independence from the subject of the audit;
- The ability to conduct an audit that addresses the criteria specified in an Eligible Audit Scheme;
- Employs individuals who have proficiency in examining Public Key Infrastructure technology, information security tools and techniques, information technology and security auditing, and the third-party attestation function;
- Certified, accredited, licensed, or otherwise assessed as meeting the qualification requirements of auditors under the audit scheme; and
- Bound by law, government regulation, or professional code of ethics.

A licensed WebTrust auditor will be appointed to perform such compliance audits as a primary responsibility.

8.3. Assessor's Relationship to Assessed Entity

To provide an unbiased and independent evaluation, the auditor and audited party shall not have any current or planned financial, legal or other relationship that could result in a conflict of interest.

8.4. Topics Covered by Assessment

The compliance audits will verify whether the CA PKI operations environment is in compliance with the applicable CP/CPS and supporting operational policies and procedures. The term CA PKI Operations environment defines the total environment and includes:

- All documentation, records;
- Contracts/agreements;
- Compliance with applicable Law;
- Physical and logical controls;
- Personnel and approved roles/tasks;
- Hardware (e.g. servers, desktops, hardware security modules, network devices and security devices); and
- Software and information.

The auditor shall provide the BTC PAC and NCDC with a compliance report highlighting any discrepancies.

8.5. Actions Taken as A Result of Deficiency

If irregularities are found by the auditor, the audited party shall be informed in writing of the findings. The audited party must submit a report to the auditor or directly to NCDC or BTC PAC, as determined, as to any remedial action the audited party will take in response to the identified deficiencies. This report shall include a time for completion to be approved by the auditor or by NCDC in conjunction with emdha TSA CA, as appropriate.

Where an audited party fails to take remedial action in response to the identified deficiencies, NCDC shall be informed by the auditor and shall take the appropriate action, according to the severity of the deficiencies.

8.6. Communication of Results

An Audit Compliance Report, including identification of corrective measures taken or being taken by the audited party, shall be provided to the BTC PAC and/or NCDC as applicable.
emdha TSA CA shall make the Audit Report publicly available no later than three months after the end of the audit period. In the event of a delay greater than three months, an explanatory letter is to be signed by the Qualified Auditor.

9. Other Business and Legal Matters

9.1. Fees

9.1.1. Certificate Issuance/Renewal Fee

No stipulation.

9.1.2. Certificate Access Fees

No stipulation.

9.1.3. Revocation or Status Information Access Fee

No stipulation.

9.1.4. Fees for Other Services

No stipulation.

9.1.5. Refund Policy

No stipulation.

9.2. Financial Responsibility

emdha TSA CA disclaims all liability implicit or explicit due to the use of any certificates issued by the emdha TSA CA which certify public keys of subscribers.

9.2.1. Insurance Coverage

Insurance coverage for any CA shall be in accordance with the applicable Agreement between the contracting party and the CA.

9.2.2. Other Assets

emdha TSA CA shall have sufficient financial resources to maintain their operations and perform their duties.

9.2.3. Insurance/warranty Coverage for End-Entities

emdha TSA CA disclaims all liability implicit or explicit due to the use of any certificates issued by the emdha TSA CA, which only certifies public keys of subscribers. It is the sole responsibility of subscribers

and relying parties to ensure an adequate insurance, to cover risks using the certificate or rendering respective services.

9.3. Confidentiality of Business Information

Information pertaining to emdha TSA CA and not requiring protection may be made publicly available at the discretion of BTC PAC. Specific confidentiality requirements for business information are defined in Privacy Policy and applicable Agreements.

9.3.1. Scope of Confidential Information

Any corporate or personal information held by emdha TSA CA and Trust Services related to the application and issuance of Certificates is considered confidential and will not be released without the prior consent of the relevant holder, unless otherwise required by law or to fulfil the requirements of this CP/CPS, and in accordance with BTC PKI Privacy policy. BTC PKI Document Security Policy specifies which documents are considered to be confidential. Information contained in certificates and related certificate status is not confidential.

- Certificate Information

The reasons for a certificate being suspended or revoked is considered confidential information, with the exception or CRL Extension - Reason Code, as specified in RFC 5280, and the revocation of the emdha TSA CA due to;

- The compromise of their private key, in which case a disclosure may be made that the private key has been compromised;
- The termination of the emdha TSA CA, in which case prior disclosure of the termination may be given.

- PKI Documentation

BTC PKI Document Security Policy specifies which documents are considered to be confidential.

9.3.2. Information not within the Scope of Confidential Information

Such information as specified by the BTC PAC, BTC PKI Privacy Policy, BTC PKI Document Security Policy, CA Operations Manual and applicable Agreements.

9.3.3. Responsibility to Protect Confidential Information

All PKI participants shall be responsible for protecting the confidential information they possess in accordance with BTC PKI Privacy Policy and applicable laws and Agreements.

9.4. Privacy of Personal Information

Any personal identifying information collected by emdha TSA CA shall be protected in accordance with BTC PKI Privacy Policy. It shall use reasonable measures to protect personal identifying information from disclosure to any third party.

9.4.1. Privacy Plan

Any confidential information collected by emdha TSA CA shall be protected in accordance with BTC PKI Privacy Policy.

9.4.2. Information Treated as Private

Any information that is not publicly available through the content of the issued certificate, repository and online CRL's is treated as private.

9.4.3. Information not Deemed Private

Information appearing in issued Certificates such as the name, organization affiliation and pubic key will not be deemed private.

9.4.4. Responsibility to Protect Private Information

Access to emdha TSA CA held private information shall be restricted to those with an official need-to-know basis in order to perform their official duties.

9.4.5. Notice and Consent to Use Private Information

Requirements for notice and consent to use private information are defined in the respective Agreements and BTC PKI Privacy Policy.

9.4.6. Disclosure Pursuant to Judicial/Administrative Process

Any disclosure shall be handled in accordance with BTC PKI Privacy Policy.

9.4.7. Other Information Disclosure Circumstances

Any disclosure shall be handled in accordance with BTC PKI Privacy Policy.

9.5. Intellectual Property Rights

BTC PAC retains exclusive rights to any product(s) or information developed under or pursuant to this CP/CPS.

9.6. Representations and Warranties

9.6.1. emdha TSA CA's Representations and Warranties

emdha TSA CA provides representations and warranties in accordance with this CP/CPS, respective agreements and applicable laws and regulations as below:

- Providing the operational infrastructure and certification services;
- Making reasonable efforts to ensure it conducts an efficient and trustworthy operation. "Reasonable efforts" include but are not limited to operating in compliance with:
  - Documented CP/CPS;
  - Documented CA Operations Manual; and
  - Within applicable agreements, Saudi Law and regulations.
- At the time of Certificate issuance; emdha TSA CA implemented procedure for verifying accuracy of the information contained within it before installation and first use;
- Maintaining 24 x 7 publicly-accessible repositories with current emdha TSA CA issued CA certificates and CRLs;
- For the CA's, the Hardware Security Modules (HSM's) used for key generation meet the requirements of FIPS 140-2 Level 3 to store the CA keys and take reasonable precautions to prevent any loss, disclosure, or unauthorized use of the CA private key(s)
- CA private key(s) are generated using multi-person control "m-of-n" split key knowledge scheme;

- Backing up of the CA signing Private Key(s) under the same multi-person control as the original Signing Key;
- Keep confidential, any passwords, PINs or other personal secrets used in obtaining authenticated access to PKI facilities and maintain proper control procedures for all such personal secrets;
- Use its private signing key only to sign certificates and CRLs and for no other purpose;
- Perform authentication and identification procedures in accordance with applicable Agreement and CA Operations Manual;
- Provide certificate and key management services in accordance with the CP and CPS; and
- Ensure that CA personnel use private keys issued for the purpose of conducting CA duties only for such purposes.

9.6.2. RA Representations and Warranties

No Stipulation.

9.6.3. Relying Parties Representations and Warranties

Relying Parties who rely upon the certificates issued under emdha TSA CA shall:

- Use the certificate for the purpose for which it was issued, as indicated in the certificate information (e.g., the key usage extension);
- Verify the Validity by ensuring that the Certificate was valid at the time of signing;
- Establish trust in the CA who issued a certificate by verifying the certificate path in accordance with the guidelines set by the X.509 Version 3 amendment;
- Ensure that the Certificate had not been suspended or revoked at the time of signing; and
- Determining that such Certificate provides adequate assurances for its intended use.

9.6.4. Subscriber Representations and Warranties

No stipulation.

9.7. Disclaimers of Warranties

emdha TSA CA hereby disclaims all warranties including warranty on merchantability and /or fitness to a particular purpose other than to the extent prohibited by law or otherwise expressly provided in emdha TSA CA CP/CPS.

emdha TSA CA, through its associated components, seeks to provide digital certification services according to international standards and best practices, using secure physical and electronic installations.

emdha TSA CA provides no warranty, express, or implied, statutory or otherwise and disclaims any and all liability for the success or failure of the deployment of the emdha TSA CA or for the legal validity, acceptance or any other type of recognition of its own certificates, any digital signature backed by such certificates, and any products/solutions/services provided by emdha TSA CA. emdha TSA CA further disclaims any warranty of merchantability or fitness for a particular purpose of the above-mentioned certificates, digital signatures and products/solutions/services.

9.8. Limitations of Liability

emdha TSA CA disclaims liability to the certificate beneficiaries or any other third-parties for any loss suffered as a result of use or reliance on a certificate beyond those specified in emdha TSA CA CP/CPS,

when such certificate has been issued and managed by emdha TSA CA in compliance with this CP/CPS. In any other case:

- emdha TSA CA will not incur any liability to Subscribers or any person to the extent that such liability results from their negligence, fraud or willful misconduct;
- emdha TSA CA assumes no liability whatsoever in relation to the use of Certificates or associated Public-Key/Private-Key pairs issued under this policy for any use other than in accordance with this policy. Subscribers will immediately indemnify emdha TSA CA from and against any such liability and costs and claims arising therefrom;
- emdha TSA CA will not be liable to any party whosoever for any damages suffered whether directly or indirectly as a result of an uncontrollable disruption of its services;
- End-Users are liable for any form of misrepresentation of information contained in the certificate to relying parties even though the information has been accepted by emdha TSA CA;
- Subscribers to compensate a Relying Party which incurs a loss as a result of the Subscriber's breach of Subscriber agreement;
- Relying Parties shall bear the consequences of their failure to perform the Relying Party obligations;
- RKAs shall bear the consequences of their failure to perform the obligations described in the RKA agreement; and
- emdha TSA CA denies any financial or any other kind of responsibility for damages or impairments resulting from its CA operation.

9.9. Indemnities

Notwithstanding any limitations on its liability to Subscribers and Relying Parties, emdha TSA CA understands and acknowledges that the Saudi National Root CA or Application Software Suppliers who have a Root Certificate distribution agreement in place with the Saudi National Root CA do not assume any obligation or potential liability of emdha TSA CA under these requirements or that otherwise might exist because of the issuance or maintenance of Certificates or reliance thereon by Relying Parties or others. Thus, emdha TSA CA shall defend, indemnify, and hold harmless each Application Software Supplier for any and all claims, damages, and losses suffered by such Application Software Supplier related to a Certificate issued by emdha TSA CA, regardless of the cause of action or legal theory involved. This does not apply, however, to any claim, damages, or loss suffered by such Application Software Supplier related to a Certificate issued by the emdha TSA CA where such claim, damage, or loss was directly caused by such Application Software Supplier's software displaying as not trustworthy a Certificate that is still valid, or displaying as trustworthy: (1) a Certificate that has expired, or (2) a Certificate that has been revoked (but only in cases where the revocation status is currently available from the CA online, and the application software either failed to check such status or ignored an indication of revoked status).

9.9.1. Indemnification by Subscribers

Any subscriber of emdha TSA CA or its subordinates, shall indemnify and hold harmless emdha TSA CA, its directors, its partners, its employees, any trusted root or intermediate entities and their respective directors, officers, employees, agents, and contractors from any and all damages and losses arising out of

- use of the Certificate in a manner not authorized by emdha TSA CA CP/CPS;
- tampering with the Certificate; or
- misrepresentation or omission of material fact in order to obtain or use a Certificate, whether or not such misrepresentation or omission was intentional.

In addition, Subscribers shall indemnify and hold harmless emdha TSA CA from any and all damages (including legal fees) for lawsuits, claims or actions by third-parties relying on or otherwise using the Certificate relating to:

- Subscriber's breach of their obligations under the Subscriber Agreement or emdha TSA CA CP/CPS; or
- Claims (including without limitation infringement claims) pertaining to content or other information or data supplied by subscriber to RKA.

9.9.2. Indemnification by Relying Parties

Any relying party of a certificate issued by emdha TSA CA, shall indemnify and hold harmless emdha TSA CA, its directors, its partners, any trusted root or intermediate entities and their respective directors, officers, employees, agents, and contractors from any and all damages and losses arising out of:

- breach of the Relying Party Agreement, emdha TSA CA CP/CPS, or applicable laws;
- unreasonable reliance on a Certificate;
- failure to check the Certificate's status prior to use;
- use of the Certificate in a manner not authorized by emdha TSA CA;
- tampering with the Certificate; or
- misrepresentation or omission of material fact in order to obtain or use a Certificate, whether or not such misrepresentation or omission was intentional.

9.10. Term and Termination

9.10.1. Term

This CP/CPS shall be effective upon approval by BTC PAC in liaison with approval by NCDC. Once the CP/CPS becomes effective, it is published in the repository. Amendments to this CP/CPS upon approval become effective and replace the older version in the repository.

9.10.2. Termination

This CP/CPS as amended from time to time shall remain in force until it is replaced by a new version. The latest version of the emdha TSA CA CP/CPS can be found at: https://www.emdha.sa

9.10.3. Effect of Termination and Survival

Upon termination of this CP/CPS, all emdha TSA CA participants are nevertheless bound by its terms for all certificates issued for the remainder of the validity periods of such certificates.

9.11. Individual Notices and Communications with Participants

All communication between NCDC, BTC PAC, Saudi National Root-CA, emdha TSA CA, RKAs and Subscribers shall be in writing. The communication shall be signed and stamped on the appropriate organization letterhead, where applicable.

9.12. Amendments

9.12.1. Procedure for Amendment

The BTC PAC shall review this CP/CPS at least once per year. Errors, updates, or suggested changes to this CP/CPS shall be communicated to the BTC PAC. Such communication shall include a description of the

change, a change justification, and contact information for the person requesting the change. Any technical changes in the emdha TSA CA shall be managed as per the BTC PKI Change Management Policy. Subject to the approval of NCDC, the BTC PAC reserves the right to change this CP/CPS from time to time. The BTC PAC will incorporate any such change into a new version of this CP/CPS and, upon approval, publish the new version. The new CP/CPS will carry a new version number.

9.12.2. Notification Mechanism and Period

This CP/CPS and any subsequent changes shall be made available to the emdha TSA CA participants at: https://www.emdha.sa within two weeks of approval. The BTC PAC reserves the right to amend this CP/CPS without notification for amendments that are not material, including without limitation corrections of typographical errors, changes to URL's, and changes to contact information. All the PKI participants and other parties designated by the BTC PAC shall provide their comments to the BTC PAC in accordance with section 9.11 of this document. The BTC PAC's decision to designate amendments as material or non-material shall be at the PAC's sole discretion.

9.12.3. Circumstances under which OID must be changed

The policy OID shall only change if the change in the CP/CPS results in a material change to the trust by the relying parties, as determined by the BTC PAC and shall only change pursuant to approval from NCDC.

9.13. Dispute Resolution Procedures

The use of certificates issued by the emdha TSA CA is governed by contracts, agreements, and standards set forth by emdha TSA CA. Those contracts, agreements and standards include dispute resolution policy and procedures that shall be employed in any dispute arising from the issuance or use of a certificate governed by this CP/CPS. Dispute Resolution mechanism is described in BTC PKI Complaint and Dispute Resolution Policy.

9.14. Governing Law

This CP/CPS is governed by the laws of the Kingdom of Saudi Arabia.

9.15. Compliance with Applicable Law

This CP/CPS is subject to applicable national, local and foreign laws, rules, regulations, ordinances, decrees, and orders including, but not limited to, restrictions on exporting or importing software, hardware, or technical information.

9.16. Miscellaneous Provisions

9.16.1. Entire Agreement

In the event that any one or more of the provisions contained in this CP/CPS shall for any reason be held to be invalid, illegal or unenforceable in any respect, such invalidity, illegality or unenforceability shall not affect any other provision of this CP/CPS, which shall be construed as of such invalid, illegal or unenforceable provision had never been set forth herein, and the CP/CPS shall be enforced as nearly as possible according to its original terms and intent.

9.16.2. Assignment

Except where specified by other contracts, no party may assign or delegate this CP/CPS or any of its rights or duties under this CP/CPS, without the prior written consent of the BTC PAC.

9.16.3. Severability

Should it be determined that one section of this CP/CPS is incorrect or invalid, the other sections of this CP/CPS shall remain in effect until the CP/CPS is updated. The process for updating this CP/CPS is described in section 9.12.

9.16.4. Enforcement (Attorney Fees/Waiver of Rights)

This document shall be treated according to laws of Kingdom of Saudi Arabia. Legal disputes arising from the operation of the emdha TSA CA will be treated according to laws of Kingdom of Saudi Arabia.

9.16.5. Force Majeure

emdha TSA CA shall not be liable for any failure or delay in its performance under this CP/CPS due to causes that are beyond its reasonable control, including, but not limited to, an act of God, act of civil or military authority, fire, epidemic, flood, earthquake, riot, war, failure of equipment, failure of telecommunications lines, lack of Internet access, sabotage, and reasons beyond provisions of the governing law.

9.17. Other Provisions

9.17.1. Fiduciary Relationships

Nothing contained in this CP/CPS shall be deemed to constitute either the emdha TSA CA, or any of its subcontractors, agents, officers, suppliers, employees, partners, principals, or directors to be a partner, Affiliate, trustee, of any Relying Party or any third party, or to create any fiduciary relationship between the emdha TSA CA and any Relying party, or any third party, for any purpose whatsoever.

Nothing in this CP/CPS or any Agreement between a third party and a Relying Party shall confer on any Subscriber, Customer, Relying Party, Registration Authority, Applicant or any third party, any authority to act for, bind, or create or assume any obligation or responsibility, or make any representation on behalf of the emdha TSA CA.

9.17.2. Administrative Processes

No Stipulation

Appendix- A: Type of Certificates

This section details different certificate types issued under the emdha TSA CA and their respective policies and certificate profiles.

Refer to table "Certificate Types" in Section 1.2 for the type of certificates issued by emdha TSA CA, with detailed information in subsequent sections.

1. emdha TimeStamping Authority certificate

4.1 Extension Definitions for emdha Timestamping Unit (TSU) certificate operated by emdha TimeStamping Authority

Field / fx.509 extension	Value or Value Constant	Critical
Subject	Common Name (CN) = EMDHA TimeStamping Authority O = Organization name C = SA	V1 Field
Serial Number	Unique serial number with minimum 64-bit entropy	V1 Field
CRL Distribution Points	[1] CRL Distribution Point Distribution Point Name: Full Name: URL=http://repository.emdha.sa/crls/tsaca.crl	NO
Authority Key Identifier	<Same as the SubjectKeyIdentifier of the emdha TSA CA>	NO
Subject Key Identifier	key Identifier encoded in compliance to RFC 5280 The key Identifier should be composed of the 160-bit SHA-1 hash of the value of the BIT STRING subjectPublicKey of the subscriber public key (excluding the tag, length, and number of unused bits).	NO
Basic Constraints	Subject Type=End Entity Path Length Constraint=None	YES
Authority Information Access	[1]Authority Info Access Access Method=On-line Certificate Status Protocol (1.3.6.1.5.5.7.48.1) Alternative Name: URL=http://ocsp.emdha.sa [2]Authority Info Access Access Method=Certification Authority Issuer (1.3.6.1.5.5.7.48.2) Alternative Name: URL=http://repository.emdha.sa/cacerts/tsaca.crt	NO
Certificate Policies	[1]Certificate Policy: Policy Identifier=2.16.682.1.101.5000.1.4.1.1.4.1 [1,1]Policy Qualifier Info:	NO

Field / fx.509 extension	Value or Value Constant	Critical
	Policy Qualifier Id=CPS Qualifier: https://www.emdha.sa [1,2]Policy Qualifier Info: Policy Qualifier Id=User Notice Qualifier: Notice Text= emdha TimeStamping Unit (TSU) certificate.	
Key Usage	Digital Signature	YES
Extended Key Usage	Time Stamping	YES