सत्यमेव जयते

eOffice

A DIGITAL WORK PLACE SOLUTION

eOffice

eOffice Deployment Framework

(Deployment Guidelines)

NIC-EOF-DF-GDL-001

Prepared by

एनआईसी
National Informatics Centre

Contents

Abbreviations

CRL	**Certificate Revocation List**
DC	**Data Centre**
DR	**Disaster Recovery / Data Redundancy**
DNS	**Domain Name Server**
DSC	**Digital Signature Certificate**
ESA	**eOffice Systems Administrators**
LDAP	**Lightweight Directory Access Protocol**
LDC	**Local Data Centre**
LR	**Logical Replication (PostgreSQL Database)**
NDC	**National Data Centre**
NTP	**Network Time Protocol**
PITR	**Point In Time Recovery**
PMS	**Professional (Managed) Services**
RAID	**Redundant Array of Independent Disks**
SAN	**Storage Area Network**
SDC	**State Data Centre**
SSL	**Secure Socket Layer**
SR	**Streaming Replication (PostgreSQL Database)**
VM	**Virtual Machine**

Amendment History

S.No.	Version	Date of Release	Date of Amendment	Amended By	Amendments
1.	1.0	19-01-2014			
2.	1.1	12-12-2014	11-12-2014	eOffice Division	• Specifications revised in **Annexure - A:** Requirements for eOffice Premium edition. • Specifications revised in **Annexure - A:** Requirements for eOffice Lite edition.
3.	2.0	01-06-2016	01-06-2016	eOffice Division	• Revision of categories based on user base revised in **Annexure - A**. • eOffice deployment types based on products revised in **Annexure - A**. • Hardware requirements revised in **Annexure - A**.
4.	3.0	26-03-2018	26-03-2018	eOffice Division	• Revision in eOffice deployment types. • Revision in Hardware and Software requirements in **Annexure - A**. • Deletion of "PERFORMA FOR FORMAL HANDING OVER AND TAKING OVER OF EOFFICE SERVERS"
5.	4.0	07-11-2019	07-11-2019	eOffice Division	• Revision in Section 2 (**Pre-requisites for eOffice Deployment**) • Revision in Section 3 (**Type I Deployment Guidelines**) • Revision in Section 4 (**Type II Deployment Guidelines**) • Revision in "Hardware Requirements" and "Software" in **Annexure – A**. • Addition of "**Data Redundancy**" and "**Minimum OS Partitioning**" sections in **Annexure - A**. • Revision in Check Lists for Type I and Type II Deployments (**Annexure - B** and **Annexure - C**) • Revision in Roles and Responsibilities for Type I and Type II Deployments (**Annexure - D**)
6.	5.0	15-05-2020	14-05-2020	eOffice Division	• Revision in Section 1 (**Purpose of the Document**) • Revision in Section 2 (**Pre-requisites for eOffice Deployment**) • Revision in "Hardware Requirements" in **Annexure – A** • Revision in Annexure-E (**eOffice Deployment Ready Reckoner**)
7.	6.0	30-11-2021	30-11-2021	eOffice Division	
8.	7.0	29-08-2023	29-08-2023	eOffice Division	• Added Type-III Deployment Category and accordingly Annexures are amended. • Updated Annexure-A (Requirements for eOffice) for eOffice (eFile and SPARROW) • Added Deployment Architecture and Technology Description.

1. Purpose of the Document

The eOffice Product is being implemented across the Government levels of Centre, States, Districts, PSUs, etc. The deployment of eOffice product can be done in eOffice Cloud, NIC/NICSI Data Centre, RailTel Data Centre or CSC SPV Data Centre (based on the MoU signed by NIC and NICSI with RailTel and CSC SPV), State Data Centre (SDC), Local Data Centre (LDC) or in any other data centre / cloud environment. Both RailTel and CSC SPV will herein after referred to as "Partner Organization's".

Establishing an eOffice Deployment Framework is important and the areas to be included in framework for ensuring effective deployment management and sustainability of eOffice are as follows:

- Deployment Strategy
- Approach & Model for Deployment
- Defining the Responsibility Matrix
- Process and Guidelines
- Availability of Deployment Infrastructure

This document includes all the above factors.

2. eOffice Deployment Framework

The eOffice Deployment Framework categorizes eOffice deployment into three broad types and for each type, the check lists & roles and responsibilities matrix is defined.

Deployment Types:

- **Type I: Deployment of eOffice in eOffice Cloud.**
  Under this type, only the ministries, departments and apex bodies of GOI are deployed in eOffice Cloud.

- **Type II: Deployment of eOffice in NIC/NICSI Data Centre, Partner Organization's Data Centres.**

  Under this type, the deployment is done in NIC/NICSI Data Centre or Partner Organization's Data Centres. This deployment also has offering of Professional (Managed) services for system administration and management of the instances.

- **Type III: Deployment of eOffice in State Data Centre (SDC), Local Data Centre (LDC) and any other data centre or cloud environment.**
  Under this type, the deployment is done in State Data Centre (SDC), Local Data Centre (LDC) and any other data centre or cloud environment. The data centres may not be fully fledged data centres but subject to fulfilling of eOffice pre-requisites, the eOffice deployment is done. The access to eOffice in these departments is strictly made available as per the department's / data centre's rules & regulations.

Pre-requisites for eOffice Deployment

eOffice Project Division has prepared the server (compute) and storage requirements based primarily on the total numbers of users and eOffice version. These requirements are arrived at by the deployment experience gathered over the years, inputs from the Data Centre teams and also on the basis of performance testing of eOffice application. **(Ref: Annexure-A)**

As eOffice data is very critical and the implementing organizations are increasingly dependent on eOffice services, therefore, Data redundancy at Primary and Remote Data Centre is **Mandatory** and DR (Disaster Recovery) at Remote Data Centre is **STRONGLY RECOMMENDED**. The data redundancy has been achieved by bringing in additional infrastructure by configuring the following:

a) Database replication is through DB SR and also by storing the PITR logs.
b) Replication of documents and configurations is achieved by rsync in provisioned Backup Server.
c) For MongoDB: Additional replica nodes are required to be created at Remote Data Centre.

In order to identify security breaches and data tempering, if any, in eOffice applications; recording the access trails and transactions of all the applications and servers is necessary. For storing these audit logs, Logs Server is required to be provisioned along with its backup mandatorily at the Primary Data Centre. Apart from this, Logs Backup Server is **mandatory** to be configured at Remote Data Centre also.

The requirements will be mildly on the higher side keeping in view the horizon of 2-3 years. Further, the requirements are kept higher by a factor of 20% as a best practice. It is expected that requirements are defined in such a manner that it will be convenient for IT heads or decision makers as incremental additions to infrastructure is not only difficult in terms of internal approvals but also inconvenient for technical teams to add new infrastructure on routine basis without disrupting the services and other impacts known and unknown.

3. Type I Deployment Guidelines

The Type I deployment is essentially meant for the Central Government Line Ministries, Departments and Apex Bodies and will start once the approval for hosting is received by eOffice Project Division.

The steps involved in deployment are as follows:

1. Based on the eOffice version (eFile or SPARROW), the necessary provisioning will be done as per the details mentioned in **Annexure-A.**
2. The DNS will be registered under the sub-domain **'eoffice.gov.in'**.
3. eOffice instance will be setup as per the eOffice Setup instructions provided time to time.
4. The eOffice is restricted to NICNET/NKN/WEBVPN and check at firewall level may be ascertained.
5. The user authentication happens through NIC/GOV email-id through Parichay SSO.
6. All eOffice sites have to be mandatorily SSL enabled. The SSL certificate must be obtained for each eOffice instance and configured.
7. Sync the server timings with NDC NTP server. This is critical activity and must be doubly assured.
8. Register the site with Data Centre monitoring tools like Nagios, Zabbix, etc. so that it comes under monitoring dashboard.
9. Ensure that all the forms for scheduling the offline backups are submitted to NDC.
10. Ensure that DB (PostgreSQL and MongoDB) replication and PITR are running.
11. Ensure that Logs along with their backup are being maintained.
12. The eOffice System Administrator must fill the check list provided in **Annexure-B** and ensure that all the activities are checked before going live.
13. The eOffice System Administrator must fill the check list provided in **Annexure-C** and ensure that all the activities are checked after Go-Live of eOffice.
14. The eOffice System Administration must prepare the Deployment Document.
15. The roles and responsibilities for Type I deployment need to be strictly followed **(Ref: Annexure-D)**.

4. Type II Deployment Guidelines

Under this type, the deployment is done either in **NIC/NICSI Data Centres, Partner Organization's Data Centres**, as the case may be.

The steps involved in deployment are as follows:

1. Based on the eOffice version (eFile or SPARROW), the necessary provisioning is made available by the concerned department as per **Annexure-A.**
2. DNS registration as per department policy.
3. Training to be provided to the system admin team of NIC/NICSI Data Centres, Partner Organization's Data Centres.
4. eOffice instance will be setup by the system admin team of NIC/NICSI Data Centres, Partner Organization's Data Centres under the assistance of eOffice team as per the eOffice setup instructions provided time to time.
5. The user authentication mechanism will be done through **LDAP/AD** (to be compliant with eOffice) or **Parichay SSO**.
6. Valid SSL certificate is mandatory.
7. Sync the server timings with NTP server.
8. Schedule the offline/Tape backups of recommended mount points of production Server/VMs on Primary/Remote DC.
9. It is mandatory to identify storage & backup servers for copying of configuration files, uploaded documents and logs data other than offline backup.
10. Setup the DB (PostgreSQL and MongoDB) replication. PITR is mandatory.
11. For **DSC/eSign**, a separate CRL server/eSign gateway server need to be established at data centre.
12. For availing eSign facility, department may contact empanelled eSign Service Providers and sign an agreement with them as ASP (Application Service Provider). Department may also provision the necessary infrastructure at data centre, if required.
13. For **SMS & Email** alerts services, necessary configuration and port opening will be the responsibility of department / data centre.
14. For Inter-departmental file exchange, a separate server for **ActiveMQ** service may be established at data centre, if required.
15. For revocation of eOffice Activation Key, ports (**80** and **443**) of Web and Application Server(s) to https://eoffice.gov.in are required to be opened.
16. The system admin team of NIC/NICSI Data Centres, Partner Organization's Data Centres must fill the check list provided in **Annexure-B** and ensure that all the activities are checked before going live.
17. The system admin team of NIC/NICSI Data Centres, Partner Organization's Data Centres must fill the check list provided in **Annexure-C** and ensure that all the activities are checked after Go-Live of eOffice.
18. The system admin team of NIC/NICSI Data Centres, Partner Organization's Data Centres must prepare the Deployment Document
19. The roles and responsibilities for Type II deployment need to be strictly followed **(Ref: Annexure-D)**.

5. Type III Deployment Guidelines

Under this type, the deployment is done either in **State Data Centre (SDC), Local Data Centre (LDC) and any other data centre or cloud environment**, as the case may be.

The steps involved in deployment are as follows:

1. Based on the eOffice version (eFile or SPARROW), the necessary provisioning is made available by the concerned department as per **Annexure-A.**
2. DNS registration as per department policy.
3. Training to be provided to the system admin team of department.
4. eOffice instance will be setup by eOffice admin team in presence of local admin team as per the eOffice setup instructions provided time to time.
5. The user authentication mechanism will be done through **LDAP/AD** (to be compliant with eOffice) or **Parichay SSO**.
6. SSL certificate is mandatory.
7. Sync the server timings with NTP server.
8. Department may register their eOffice instance with local monitoring tools, if available.
9. Schedule the offline/Tape backups of recommended mount points of production Serv/VMs on Primary/Remote DC as per DC/Department policy.
10. Setup the DB (PostgreSQL and MongoDB) replication. PITR is mandatory.
11. For **DSC/eSign**, a separate CRL server/eSign gateway server need to be established at data centre.
12. For availing eSign facility, department may contact empanelled eSign Service Providers and sign an agreement with them as ASP (Application Service Provider). Department may also provision the necessary infrastructure at data centre, if required.
13. For **SMS & Email** alerts services, necessary configuration and port opening will be the responsibility of department / data centre.
14. For Inter-departmental file exchange, a separate server for **ActiveMQ** service may be established at data centre, if required.
15. For revocation of eOffice Activation Key, ports (**80** and **443**) of Web and Application Server(s) to https://eoffice.gov.in are required to be opened.
16. The eOffice System Administrator identified by department must fill the check list provided in **Annexure-B** and ensure that all the activities are checked before going live. The duly signed and stamped check list must also be submitted by eOffice Nodal Coordinator of the department to eOffice PMU for records.
17. The eOffice System Administrator identified by department must fill the check list provided in **Annexure-C** and ensure that all the activities are checked after Go-Live of eOffice. The duly signed and stamped check list must also be submitted by eOffice Nodal Coordinator of the department to eOffice PMU for records on quarterly basis i.e. before 7th of April, July, October and January.
18. The duly signed and stamped check lists provided in **Annexure-B** and **Annexure-C** are required to be mandatorily submitted by eOffice Nodal Coordinator of the department to eOffice PMU for compliance towards eOffice Data Redundancy.
19. The eOffice System Administrator identified by department, in coordination with eOffice System Administration Team, must prepare the Deployment Document and share it with eOffice PMU. As and when any revision is made in the Deployment Document, the same may be again shared with eOffice PMU for records.
20. The roles and responsibilities for Type III deployment need to be strictly followed **(Ref: Annexure-D)**.

Annexure–A (REQUIREMENTS FOR EOFFICE)

1. Hardware Requirements

1.1 eOffice (eFile)

Servers and Storage Specifications for eOffice (eFile)						
User base	**Functionality Of the Server**	**CPU Cores**	**RAM (in GB)**	**O/S Storage (in GB)**	**Additional Storage (in GB)**	**Mount Points**
1-100	Web	4	8	70	-	-
	Application, Redis, Kafka, Zookeeper, ELK	16	20	70	150	/eOffice (100GB) $ /Uploads (50GB) $
	PostgreSQL DB	12	16	70	100	/var/lib/pgsql (100GB) $
	MongoDB	4	8	70	300	/MongoDB (300GB) $
	PostgreSQL DB SR & PITR MongoDB Replica Logs Backup	4	4	70	650	/var/lib/pgsql (300GB) /MongoDB (300GB) /Logs (50GB)
	Backup & Logs	2	2	70	300	/eOffice (100GB) /Uploads (50GB) /Logs (50GB) $ /var/lib/pgsql (100GB)
	CRL & eSign Gateway Server	2	4	70	50	/eOffice (50GB)
101-250	Web	4	8	70	-	-
	Application, Redis, Kafka, Zookeeper, ELK	20	24	70	150	/eOffice (100GB) $ /Uploads (50GB) $
	PostgreSQL DB	16	20	70	150	/var/lib/pgsql (150GB) $
	MongoDB	8	12	70	450	/MongoDB (450GB) $
	PostgreSQL DB SR & PITR MongoDB Replica Logs Backup	4	8	70	1000	/var/lib/pgsql (450GB) /MongoDB (450GB) /Logs (100GB)
	Backup & Logs	2	2	70	400	/eOffice (100GB) /Uploads (50GB) /Logs (100GB) $ /var/lib/pgsql (150GB)
	CRL & eSign Gateway Server	2	4	70	50	/eOffice (50GB)
251-500	Web	8	12	70	-	-
	Application, Redis, Kafka, Zookeeper, ELK	24	30	70	150	/eOffice (100GB) $ /Uploads (50GB) $
	PostgreSQL DB	20	24	70	200	/var/lib/pgsql (200GB) $
	MongoDB	12	16	70	600	/MongoDB (600GB) $
	PostgreSQL DB SR & PITR MongoDB Replica Logs Backup	4	8	70	1350	/var/lib/pgsql (600GB) /MongoDB (600GB) /Logs (150GB)
	Backup & Logs	2	4	70	500	/eOffice (100GB) /Uploads (50GB) /Logs (150GB) $ /var/lib/pgsql (200GB)
	CRL & eSign Gateway Server	2	4	70	50	/eOffice (50GB)

Servers and Storage Specifications for eOffice (eFile)						
User base	**Functionality Of the Server**	**CPU Cores**	**RAM (in GB)**	**O/S Storage (in GB)**	**Additional Storage (in GB)**	**Mount Points**
501-1000	Web	8	12	70	-	-
	Application, Redis, Kafka, Zookeeper, ELK	24	32	70	200	/eOffice (100GB) $ /Uploads (100GB) $
	PostgreSQL DB	24	32	70	250	/var/lib/pgsql (250GB) $
	MongoDB	8	12	70	700	/MongoDB (700 GB) $
	MongoDB Temp Server	2	4	70	250	/MongoDB (250GB)
	PostgreSQL DB SR & PITR MongoDB Replica Logs Backup	8	12	70	1650	/var/lib/pgsql (750GB) /MongoDB (700GB) /Logs (200)
	Backup & Logs	4	4	70	650	/eOffice (100GB) /Uploads (100GB) /Logs (200GB) $ /var/lib/pgsql (250GB)
	CRL & eSign Gateway Server	2	4	70	50	/eOffice (50GB)
1001-2500	Web	12	16	70	-	-
	Application	30	36	70	200	/eOffice (100GB) $ /Uploads (100GB) $
	PostgreSQL DB	30	40	70	300	/var/lib/pgsql (300GB) $
	MongoDB	12	16	70	900	/MongoDB (900GB) $
	MongoDB Temp Server	4	8	70	300	/MongoDB (300GB)
	PostgreSQL DB SR & PITR MongoDB Replica Logs Backup	8	12	70	2100	/var/lib/pgsql (900GB) /MongoDB (900GB) /Logs (300)
	Redis, Kafka, Zookeeper, ELK	8	12	70	100	/eOffice (100GB)
	Backup & Logs	4	8	70	800	/eOffice (100GB) /Uploads (100GB) /Logs (300GB) $ /var/lib/pgsql (300GB)
	CRL & eSign Gateway Server	4	8	70	100	/eOffice (100GB)
2501-5000	Web	12	20	70	-	-
	Application	36	48	70	200	/eOffice (100GB) $ /Uploads (100GB) $
	PostgreSQL DB	36	48	70	300	/var/lib/pgsql (300GB) $
	MongoDB	12	20	70	1100	/MongoDB (1100GB) $
	MongoDB Temp Server	4	8	70	350	/MongoDB (350GB)
	PostgreSQL DB SR & PITR MongoDB Replica Logs Backup	8	16	70	2400	/var/lib/pgsql (900GB) /MongoDB (1100GB) /Logs (400)
	Redis, Kafka, Zookeeper, ELK	8	16	70	100	/eOffice (100GB)
	Backup & Logs	4	8	70	900	/eOffice (100GB) /Uploads (100GB) /Logs (400GB) $ /var/lib/pgsql (300GB)
	CRL & eSign Gateway Server	4	8	70	100	/eOffice (100GB)

Servers and Storage Specifications for eOffice (eFile)						
User base	**Functionality Of the Server**	**CPU Cores**	**RAM (in GB)**	**O/S Storage (in GB)**	**Additional Storage (in GB)**	**Mount Points**
5001-10000	Web	16	20	70	-	-
	Application-1	20	32	70	250	/eOffice (100GB) $ /Uploads (150GB) * $
	Application-2	20	32	70	100	/eOffice (100GB) $
	PostgreSQL DB	40	64	70	600	/var/lib/pgsql (600GB) $
	PostgreSQL DB LR	16	32	70	600	/var/lib/pgsql (600GB)
	MongoDB	32	48	70	2000	/MongoDB (2000GB) $
	MongoDB Temp Server	12	16	70	700	/MongoDB (700GB)
	PostgreSQL DB SR & PITR MongoDB Replica Logs Backup	20	32	70	4700	/var/lib/pgsql (1800GB) /MongoDB (2000GB) /Logs (900)
	Redis, Kafka, Zookeeper, ELK	12	16	70	150	/eOffice (150GB)
	Backup & Logs	8	12	70	1850	/eOffice (200GB) /Uploads (150GB) /Logs (900GB) $ /var/lib/pgsql (600GB)
	CRL & eSign Gateway Server	8	16	70	100	/eOffice (100GB)
10001-25000	Web	32	48	70	50	/eOffice (50GB)
	Application -1	28	40	70	300	/eOffice (100GB) $ /Uploads (200GB) * $
	Application -2	28	40	70	100	/eOffice (100GB) $
	Application -3	28	40	70	50	/eOffice (50GB) $
	PostgreSQL DB	48	96	70	1500	/var/lib/pgsql (1500GB) $
	PostgreSQL DB LR	24	48	70	1500	/var/lib/pgsql (1500GB)
	MongoDB Config & Query -1	8	16	70	100	/MongoDB (100GB) $
	MongoDB Config & Query -2	8	16	70	100	/MongoDB (100GB) $
	MongoDB Shard-1	12	16	70	1100	/MongoDB (1100GB) $
	MongoDB Shard-1 Replica1	12	16	70	1100	/MongoDB (1100GB) $
	MongoDB Shard-1 Replica2	12	16	70	1100	/MongoDB (1100GB) $
	MongoDB Shard-2	12	16	70	1100	/MongoDB (1100GB) $
	MongoDB Shard-2 Replica1	12	16	70	1100	/MongoDB (1100GB) $
	MongoDB Shard-2 Replica2	12	16	70	1100	/MongoDB (1100GB) $
	MongoDB Shard-3	12	16	70	1100	/MongoDB (1100GB) $
	MongoDB Shard-3 Replica1	12	16	70	1100	/MongoDB (1100GB) $
	MongoDB Shard-3 Replica2	12	16	70	1100	/MongoDB (1100GB) $
	MongoDB Temp Server	12	16	70	1000	/MongoDB (1000GB)
	PostgreSQL DB SR & PITR Logs Backup	12	16	70	6500	/var/lib/pgsql (4500GB) /Logs (2000)
	Redis, Kafka, Zookeeper, ELK	12	20	70	100	/eOffice (100GB)
	Backup & Logs	12	16	70	4000	/eOffice (300GB) /Uploads (200GB) /Logs (2000GB) $ /var/lib/pgsql (1500GB)
	CRL & eSign Gateway Server	16	32	70	200	/eOffice (200GB)

a) SAN is the recommended storage media. (High speed NAS, comparable to SAN speed, can be used for /Uploads mount point).
b) */eOffice must be mounted to each application server and /Uploads is a common mount point shared across all application servers (NFS).
c) $ Offline backup is mandatory for these mount points.
d) $ Offline backup is recommended for these mount points.
e) Storage (GB) is the additional storage required at Mount Point after minimum OS partitioning as specified in Point No. 4 at Page 18.
f) Whenever services are required to run from DB SR Server/MongoDB Replica Server, then the resources of DB SR Server / MongoDB Replica Server to be made equivalent to Database Server / MongoDB Server.
g) In DB SR Server, PITR is required to be configured.
h) Storage for Logs (including PITR) has been calculated for a period of two years keeping in view that the approximate compression level is 80%.
i) CRL Server is required in case department is using DSC signing.
j) This DB backup location is used for daily dumps of database, other than the SR. Earlier, these were stored in the primary DB server only.
k) Storage requirement is tentative estimation based on the experience of the prior implementations. It may vary to implementations to implementations and based on their usage patterns.
l) Compute requirements are based on the currently used technology stack and application versions.
m) The servers (compute) requirements may vary occasionally for specific organizations, based on their usage patterns and infrastructure environment.
n) This Uploads is required in all eOffice application servers. (High Speed NAS can be used)
o) For deployments upto **5000 users** for eOffice (eFile), as a standard approach and best practice, Web Server and Application Server must be separately provisioned. However, in case user department due to whatsoever reason is unable to provision separate Web Server and Application Server, then in that case, both these servers can be clubbed into one by adding the compute (vCPU & RAM) of both the servers. By doing this, the cost of licenses (Operating System & virtualization) for one server is saved for user department.

1.2 eOffice (SPARROW)

Servers and Storage Specifications for eOffice (SPARROW)						
User base	**Functionality Of the Server**	**CPU Cores**	**RAM (in GB)**	**O/S Storage (in GB)**	**Additional Storage (in GB)**	**Mount Points**
0-100	Web Server	2	4	70	-	-
	Application Server	6	12	70	100	/eOffice $
					100	/Uploads $
	Database Server	4	8	70	100	/var/lib/pgsql $
	DB SR Server	4	8	70	300	/var/lib/pgsql
	Application Failover/ Backup Server	2	4	70	100	/eOffice
					150	/Uploads
	Logs Server	2	2	70	50	/Logs $
	Logs Backup Server	2	2	70	50	/Logs
	CRL & eSign Gateway Server	2	4	70	50	/CRL
101-250	Web Server	2	4	70	-	-
	Application Server	10	16	70	100	/eOffice $
					100	/Uploads $
	Database Server	6	16	70	100	/var/lib/pgsql $
	DB SR Server	4	8	70	300	/var/lib/pgsql
	Application Failover/ Backup Server	2	4	70	100	/eOffice
					150	/Uploads
	Logs Server	2	2	70	100	/Logs $
	Logs Backup Server	2	2	70	100	/Logs
	CRL & eSign Gateway Server	2	4	70	50	/CRL
251-500	Web Server	2	4	70	-	-
	Application Server	14	20	70	100	/eOffice $
					250	/Uploads $
	Database Server	8	20	70	200	/var/lib/pgsql $
	DB SR Server	6	12	70	600	/var/lib/pgsql
	Application Failover/ Backup Server	2	4	70	100	/eOffice
					300	/Uploads
	Logs Server	2	2	70	150	/Logs $
	Logs Backup Server	2	2	70	150	/Logs
	CRL & eSign Gateway Server	2	4	70	50	/CRL

Servers and Storage Specifications for eOffice (SPARROW)						
User base	**Functionality Of the Server**	**CPU Cores**	**RAM (in GB)**	**O/S Storage (in GB)**	**Additional Storage (in GB)**	**Mount Points**
501-1000	Web Server	4	8	70	-	-
	Application Server	12	24	70	100	/eOffice $
					250	/Uploads $
	Database Server	12	24	70	200	/var/lib/pgsql $
	DB SR Server	8	12	70	600	/var/lib/pgsql
	Application Failover/ Backup Server	2	4	70	100	/eOffice
					300	/Uploads
	Logs Server	2	2	70	250	/Logs $
	Logs Backup Server	2	2	70	250	/Logs
	CRL & eSign Gateway Server	2	4	70	50	/CRL
1001-2500	Web Server	4	8	70	-	-
	Application Server	20	40	70	100	/eOffice $
					250	/Uploads $
	Database Server	16	32	70	300	/var/lib/pgsql $
	DB SR Server	12	16	70	800	/var/lib/pgsql
	Application Failover/ Backup Server	4	8	70	100	/eOffice
					350	/Uploads
	Logs Server	4	8	70	800	/Logs $
	Logs Backup Server	4	8	70	800	/Logs
	CRL & eSign Gateway Server	4	8	70	50	/CRL
2501-5000	Web Server	4	8	70	-	-
	Application Server	20	40	70	100	/eOffice $
					300	/Uploads $
	Database Server	16	32	70	400	/var/lib/pgsql $
	DB SR Server	12	16	70	1000	/var/lib/pgsql
	Application Failover/ Backup Server	4	8	70	100	/eOffice
					350	/Uploads
	Logs Server	4	8	70	1300	/Logs $
	Logs Backup Server	4	8	70	1300	/Logs
	CRL & eSign Gateway Server	4	8	70	50	/CRL

Servers and Storage Specifications for eOffice (SPARROW)						
User base	**Functionality Of the Server**	**CPU Cores**	**RAM (in GB)**	**O/S Storage (in GB)**	**Additional Storage (in GB)**	**Mount Points**
5001-10000	Web Server	8	16	70	-	-
	Application Server-1	20	40	70	100	/eOffice $
					900	/Uploads * $
	Application Server -2	20	40	70	100	/eOffice $
	Database Server	24	64	70	400	/var/lib/pgsql $
	DB SR Server	16	24	70	1200	/var/lib/pgsql
	Application Failover/ Backup Server	4	8	70	200	/eOffice
					950	/Uploads
	Logs Server	4	8	70	2500	/Logs $
	Logs Backup Server	4	8	70	2500	/Logs
	CRL & eSign Gateway Server	4	8	70	50	/CRL
10001-25000	Web Server	12	24	70	-	-
	Application Server -1	28	56	70	100	/eOffice $
					1500	/Uploads * $
	Application Server -2	28	56	70	100	/eOffice $
	Application Server -3	28	56	70	100	/eOffice $
	Database Server	32	96	70	1000	/var/lib/pgsql $
	DB SR Server	24	32	70	2500	/var/lib/pgsql
	Application Failover/ Backup Server	4	8	70	300	/eOffice
					1550	/Uploads
	Logs Server	4	8	70	6500	/Logs $
	Logs Backup Server	4	8	70	6500	/Logs
	CRL & eSign Gateway Server	4	8	70	50	/CRL
25001-50000	Web Server	16	48	70	-	-
	Application Server -1	28	52	70	100	/eOffice $
					2500	/Uploads * $
	Application Server -2	28	52	70	100	/eOffice $
	Application Server -3	28	52	70	100	/eOffice $
	Application Server -4	28	52	70	100	/eOffice $
	Database Server	48	128	70	1000	/var/lib/pgsql $
	DB SR Server	24	64	70	3000	/var/lib/pgsql
	Application Failover/ Backup Server	4	8	70	400	/eOffice
					2550	/Uploads
	Logs Server	4	8	70	13000	/Logs $
	Logs Backup Server	4	8	70	13000	/Logs
	CRL & eSign Gateway Server	4	8	70	50	/CRL

a) */eOffice must be mounted to each application server and /Uploads is a common mount point shared across all application servers (NFS).
b) $ Offline backup is mandatory for these mount points.
c) $ Offline backup is recommended for these mount points.
d) SAN is the recommended storage media. (High speed NAS, comparable to SAN speed, can be used for /Uploads mount point).
e) Storage (GB) is the additional storage required at Mount Point after minimum OS partitioning as specified in Point No. 4 at Page 18.
f) Whenever services are required to run from DB SR Server / Application Failover Server, then the resources of DB SR Server / Application Failover Server to be made equivalent to Database Server / Application Server.
g) In DB SR Server, PITR is required to be configured.
h) Storage for Logs (including PITR) has been calculated for a period of two years keeping in view that the approximate compression level is 80%.
i) Compute requirements are based on the currently used technology stack and application versions.
j) The servers (compute) requirements may vary occasionally for specific organizations, based on their usage patterns and infrastructure environment.
k) CRL Server is required in case department is using DSC signing.
l) For deployments upto **500 users** for eOffice (SPARROW), as a standard approach and best practice, Web Server and Application Server must be separately provisioned. However, in case user department due to whatsoever reason is unable to provision separate Web Server and Application Server, then in that case, both these servers can be clubbed into one by adding the compute (vCPU & RAM) of both the servers. By doing this, the cost of licenses (Operating System & virtualization) for one server is saved for user department.

1.3 Additional Remarks:

a) Logs Backup Server, if required, can be minimized by mounting the Storage required for Logs Backup with Application Failover/ Backup Server. By doing this, additional data redundancy of logs is ensured and also the cost of additional Server/ VM for Logs Backup Server is saved for the concerned user department.
b) For eOffice (SPARROW), if multiple services are from same service/cadre controlling authority, then single sharable instance(s) can be created for all services and infra requirements will be as per above table.

2. Data Redundancy

a) For availability of data (to recover from Data Centre failure/System failures), It is mandatory to create data redundancy by configuring the following VMs/Severs at both at Primary and Remote Data Centres.

For eOffice eFile version:

- Application
- PostgreSQL DB SR & PITR, MongoDB Replica, Logs Backup Server
- All MongoDB shard and config servers (applicable for only MongoDB shard-based deployment)

For eOffice SPARROW version:

- PostgreSQL DB SR server
- Application Failover / Backup Server
- Logs Backup Server

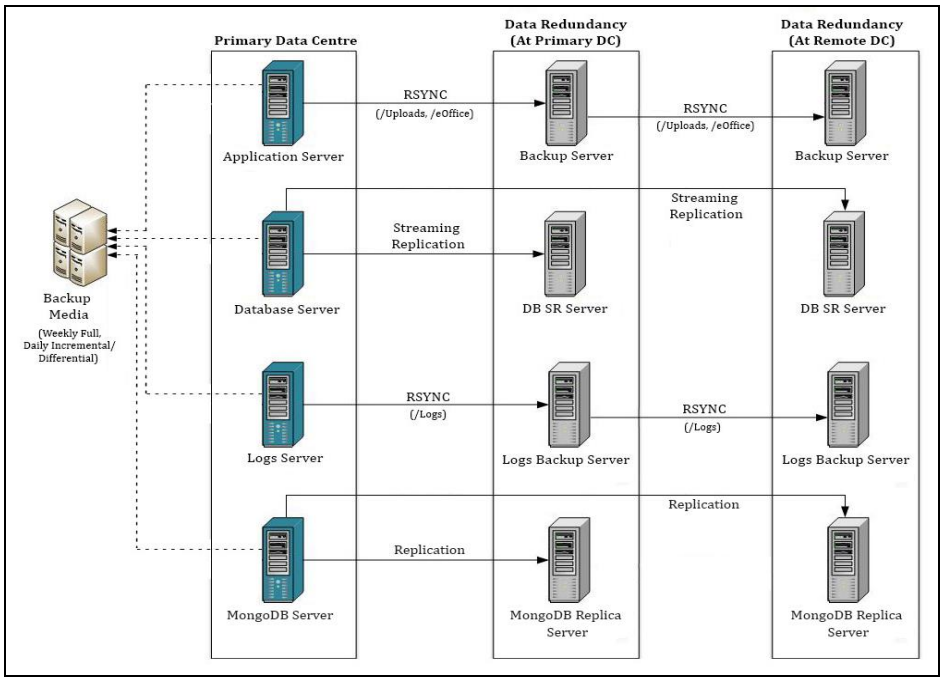
b) The data redundancy must be mandatorily created at **Primary Data Centre** by configuring PostgreSQL DB SR & PITR, MongoDB Replica, Logs Backup Server to ensure data is intact in the case of Primary Site's eOffice systems failures. In such event, respective services and data can be made available from the PostgreSQL DB SR & PITR, MongoDB Replica, Logs Backup Server by augmenting their resources.

<table>
<tr><th>User Base</th><th>eOffice (eFile)</th><th>eOffice (SPARROW)</th></tr>
<tr><td>0-100</td><td rowspan="6">• Application.
• PostgreSQL DB SR & PITR, MongoDB Replica, Logs Backup Server.</td><td rowspan="8">• Application Failover / Backup Server.
• Logs Backup Server.
• PostgreSQL DB SR server.</td></tr>
<tr><td>101-250</td></tr>
<tr><td>251-500</td></tr>
<tr><td>501-1000</td></tr>
<tr><td>1001-2500</td></tr>
<tr><td>2501-5000</td></tr>
<tr><td>5001-10000</td><td>• Application 1.
• PostgreSQL DB SR & PITR, MongoDB Replica, Logs Backup Server.</td></tr>
<tr><td>10001-25000</td><td>• Application 1.
• PostgreSQL DB SR & PITR, Logs Backup Server.
• All MongoDB Servers.</td></tr>
<tr><td>25001-50000</td><td>N/A</td></tr>
</table>

c) It is mandatory to create data redundancy of PostgreSQL in form of DB SR & PITR, MongoDB by Replica Sets, and Logs in Logs Backup Server at Primary Data Centre. Also, **Offline backup** for eFile and SPARROW is mandatory as mentioned in Point c of 1.1 and Point b of 1.2 respectively and recommended as mentioned in Point d of 1.1 and Point c of 1.2 respectively.

d) The data redundancy is mandatory to be created at **Remote Data Centre** by configuring the servers as mentioned in above table in order to ensure data is intact in the case of Primary Data Centre failure. In such event, data can be recovered from Remote Data Centre till the last consistent backup taken.

e) Offline Backups of PostgreSQL, MongoDB (only for eFile version), Uploads File System and Log Files should also be additionally undertaken mandatorily, as weekly full backup, preferably on Saturday night at 10:00 P.M. or as per the data centre policy. Followed by daily incremental/differential backup, preferably twice a day, for example, incremental backups at 01:00 P.M. and 10:00 P.M. or as per the data centre policy. This offline backup will ensure availability of eOffice data [PostgreSQL, MongoDB (only for eFile version), Uploads File System and Log Files] in the case of loss of live and redundant data, till the last consistent backup taken.



3. Software

Linux Server (RHEL /Oracle Linux/ Alma Linux), PostgreSQL, MongoDB (only for eFile) and other related softwares, as recommended by NIC eOffice Project Division may be made available at the time of deployment.

4. Minimum OS Partitioning

Mount Point	Partition Size (GB)	Partition Type
/boot	2	part
/home	5	lvm
/var	25	lvm
/tmp	10	lvm
/opt	5	lvm
[SWAP]	8	lvm
/	15	lvm

5. Other Requirements

a) Hiring / Identification of skilled team for System Administration and DB Administration, for effective administration of eOffice System for Type III deployments is mandatory before going live with the eOffice Implementation.

b) All the network and infrastructure requirements must be in place to make eOffice operational.

6. Disaster Recovery (DR)

Due to the critical nature of applications, there is a strong need of DR. DR should be at remote location. The typical setup is same as the primary and any changes in applications (WAR/Version or Products) and data to be replicated, either using storage-based replication, or host-based replication. The DR solution should support, DR Drills and failover. **The hardware, software and other infrastructure resources for DR need to be provisioned separately.**

Note:

1) The following requirements are based on typical usage and based on empirical data. Occasionally there may be slightly higher/lower requirements in each category due to the different nature of working of an organization.

2) In case site is required to run from the DR location without performance degradation then, server resource needs to be same as the primary. Otherwise, half compute (in terms of RAM and CPU) for all VM's can be allocated in DR location

ANNEXURE–B (CHECK LISTS) BEFORE GO-LIVE

1. Check List – Type I eOffice Deployments

(Fill Boxes with 'Y' or 'N' or as mentioned in activity)

1.	Copy/email for approval of hosting of eOffice instance of department	
2.	Deployment Sub category: eOffice (eFile or SPARROW)	
3.	VMs and Storage provisioned as specified in **Annexure-A**	
3.1	*Database Server provisioned at Primary Data Centre* ***(Mandatory)***	
3.2	*DB LR Server provisioned at Primary Data Centre* ***(Mandatory, if applicable)***	
3.3	*DB SR Server provisioned at Primary Data Centre* ***(Mandatory)***	
3.4	*Web Server provisioned at Primary Data Centre* ***(Mandatory, if applicable)***	
3.5	*Application Server(s) provisioned at Primary Data Centre* ***(Mandatory)***	
3.6	*CRL and eSign Gateway Server provisioned at Primary Data Centre* ***(Mandatory)***	
3.7	*Application Failover Server provisioned at Primary Data Centre* ***(Mandatory for SPARROW only)***	
3.8	*Application Backup Server provisioned at Primary Data Centre* ***(Mandatory)***	
3.9	*Logs Server provisioned at Primary Data Centre* ***(Mandatory)***	
3.10	*Logs Backup Server provisioned at Primary Data Centre* ***(Mandatory)***	
3.11	*DB SR Server provisioned at Remote Data Centre* ***(Mandatory)***	
3.12	*MongoDB Server and all Replica set provisioned at Primary Data Centre* ***(Mandatory)***	
3.13	*MongoDB Replica Server/MongoDB Shard provisioned at Remote Data Centre* ***(Mandatory)***	
3.14	*Redis Kafka Zookeeper and ELK provisioned at Primary Data Centre* ***(Mandatory)***	
3.15	*Application Failover / Backup Server provisioned at Remote Data Centre* ***(Mandatory)***	
3.16	*Logs Backup Server provisioned at Remote Data Centre* ***(Mandatory)***	
4.	Public/Private IPs assigned	
5.	Servers' accessibility and connectivity ensured (by Ping and Telnet)	
6.	Time syncing with Network Time Protocol Server (NTP)	
7.	Registered DNS (under eoffice.gov.in) received	
8.	Sent IP details to Project Manager for filling Parichay form, Email and SMS Alerts form	
9.	Firewall rules placed as per the policy	
10.	eOffice Stack deployed in Application Server(s), Web Server and Database Server (PostgreSQL and MongoDB)	
11.	SSL Certificate generated and deployed	
12.	Activation key deployed and eOffice Activation Revocation file downloaded	
13.	Parichay configuration details received and configured	
14.	DB replication setup in DB SR Server and DB LR Server at Primary Data Centre ***(Mandatory)***	
15.	DB replication setup in DB SR Server at Remote Data Centre ***(Mandatory)***	

16.	PITR setup in DB SR Server at Primary Data Centre ***(Mandatory)***	
17.	PITR setup in DB SR Server at Remote Data Centre ***(Mandatory)***	
18.	MongoDB Replication and Sharding ***(Mandatory)***	
19.	Logs Server configured at Primary Data Centre ***(Mandatory)***	
20.	Logs Backup Server configured at Primary Data Centre ***(Mandatory)***	
21.	Logs Backup Server configured at Remote Data Centre ***(Mandatory)***	
22.	Application Failover / Backup Server configured at Primary Data Centre ***(Mandatory)***	
23.	Backup Server configured at Remote Data Centre ***(Mandatory)***	
24.	CRONS scheduled	
25.	eOffice Data Offline Backups scheduled at DC	
26.	Email & SMS Alerts configuration	
27.	CRL configured	
28.	eSign configured	
29.	Deployment Document prepared	
30.	Registered with Data Centre Monitoring Tools like Nagios, Zabbix, etc. for monitoring	
31.	Deployment confirmation sent to eOffice Project Team	
32.	Go Live Date intimation received from eOffice PMU	

2. Check List – TYPE II and III eOffice Deployments

(Fill Boxes with 'Y' or 'N' or as mentioned in activity)

1.	Copy/email for approval of hosting of eOffice instance at local servers	
2.	Deployment Sub category: eOffice (eFile or SPARROW)	
3.	VMs and Storage provisioned as specified in **Annexure-A**	
3.1	*Database Server provisioned at Primary Data Centre* ***(Mandatory)***	
3.2	*DB LR Server provisioned at Primary Data Centre* ***(Mandatory, if applicable)***	
3.3	*DB SR Server provisioned at Primary Data Centre* ***(Mandatory)***	
3.4	*Web Server provisioned at Primary Data Centre* ***(Mandatory, if applicable)***	
3.5	*Application Server(s) provisioned at Primary Data Centre* ***(Mandatory)***	
3.6	*CRL Server provisioned at Primary Data Centre* ***(Mandatory)***	
3.7	*Application Failover Server provisioned at Primary Data Centre* ***(Mandatory for SPARROW***	
3.8	*Application Backup Server provisioned at Primary Data Centre* ***(Mandatory)***	
3.9	*Logs Server provisioned at Primary Data Centre* ***(Mandatory)***	
3.10	*Logs Backup Server provisioned at Primary Data Centre* ***(Mandatory)***	
3.11	*DB SR Server provisioned at Remote Data Centre* ***(Mandatory)***	
3.12	*MongoDB Server and all Replica set provisioned at Primary Data Centre* ***(Mandatory)***	
3.13	*MongoDB Replica Server/MongoDB Shard provisioned at Remote Data Centre* ***(Mandatory)***	
3.14	*Redis Kafka Zookeeper and ELK provisioned at Primary Data Centre* ***(Mandatory)***	
3.15	*Application Failover / Backup Server provisioned at Remote Data Centre* ***(Mandatory)***	
3.16	*Logs Backup Server provisioned at Remote Data Centre* ***(Mandatory)***	
4.	Network configured	
5.	Servers' accessibility and connectivity ensured (by Ping and Telnet)	
6.	Time syncing with Network Time Protocol Server (NTP)	
7.	DNS Registration	
8.	Firewall rules placed as per the policy	
9.	eOffice Stack deployed in Application Server(s), Web Server and Database Server (PostgreSQL and MongoDB)	
10.	SSL Certificate procured & configured	
11.	Activation key deployed and eOffice Activation Revocation file downloaded	
12.	Authentication through LDAP or Parichay	
13.	DB replication setup in DB SR Server and DB LR Server at Primary Data Centre ***(Mandatory)***	
14.	DB replication setup in DB SR Server at Remote Data Centre ***(Mandatory)***	
15.	PITR setup in DB SR Server at Primary Data Centre ***(Mandatory)***	
16.	PITR setup in DB SR Server at Remote Data Centre ***(Mandatory)***	
17.	MongoDB Replication and Sharding ***(Mandatory)***	
18.	Logs Server configured at Primary Data Centre ***(Mandatory)***	

19.	Logs Backup Server configured at Primary Data Centre ***(Mandatory)***	
20.	Logs Backup Server configured at Remote Data Centre ***(Mandatory)***	
21.	Application Failover / Backup Server configured at Primary Data Centre ***(Mandatory)***	
22.	Backup Server configured at Remote Data Centre ***(Mandatory)***	
23.	CRONS scheduled	
24.	eOffice Data Offline Backups scheduled at DC	
25.	Email & SMS Alerts Configuration (if required)	
26.	CRL Setup (if required)	
27.	eSign configured (if required)	
28.	Deployment Document prepared and shared with eOffice PMU	
29.	Registered with Data Centre Monitoring Tools for monitoring, if any	
30.	Deployment confirmation sent to eOffice Project Team	
31.	Training to local system administration team (in case of Type III only)	
32.	Go Live Date intimation sent to eOffice Project Team	

ANNEXURE–C (CHECK LISTS) AFTER GO-LIVE

1. Check List – Type I eOffice Deployments

(Fill Boxes with 'Y' or 'N' or as mentioned in activity and submit the duly signed & stamped check list on quarterly basis i.e., before 7th of April, July, October and January to eOffice PMU)

1.	Go Live confirmation sent to eOffice Project Team	
2.	Downloading of eOffice Activation Revocation file	
3.	Configuration of DB Scripts for showcasing eOffice Usage Statistics	
4.	Time syncing with Network Time Protocol Server (NTP)	
5.	Servers' accessibility and connectivity ensured (by Ping and Telnet)	
6.	SSL Certificate valid	
7.	DB SR and DB LR working and in sync at Primary Data Centre ***(Mandatory)***	
8.	PITR working in DB SR Server at Primary Data Centre ***(Mandatory)***	
9.	MongoDB Replication and/or Sharding working ***(Mandatory)***	
10.	Backups (/Uploads) running and in sync at Primary Data Centre ***(Mandatory)***	
11.	Backups (/eOffice) running and in sync at Primary Data Centre ***(Mandatory)***	
12.	Backups (/Logs) running and in sync at Primary Data Centre ***(Mandatory)***	
13.	Offline Backups running ***(Mandatory)***	
14.	DB replication working and in sync at Remote Data Centre ***(Mandatory)***	
15.	PITR working in DB SR Server at Remote Data Centre ***(Mandatory)***	
16.	Backups (/Uploads) running and in sync at Remote Data Centre ***(Mandatory)***	
17.	Backups (/eOffice) running and in sync at Remote Data Centre ***(Mandatory)***	
18.	Backups (/Logs) running and in sync at Remote Data Centre ***(Mandatory)***	
19.	CRONS working	
20.	DB Maintenance Scripts working	
21.	Email & SMS Alerts working	
22.	CRL Downloading working	
23.	Revision in Deployment Document (if applicable)	
24.	Configured in Monitoring Tools	
25.	Latest Applications version deployed	
26.	Servers VA done and patched	

2. Check List – Type II and III eOffice Deployments

(Fill Boxes with 'Y' or 'N' or as mentioned in activity and submit the duly signed & stamped check list on quarterly basis i.e., before 7th of April, July, October and January to eOffice PMU)

1.	Go Live confirmation sent to eOffice Project Team	
2.	Downloading of eOffice Activation Revocation file	
3.	Configuration of XML Scripts for showcasing eOffice Usage Statistics	
4.	Time syncing with Network Time Protocol Server (NTP)	
5.	Servers' accessibility and connectivity ensured (by Ping and Telnet)	
6.	SSL Certificate valid	
7.	DB SR and DB LR working and in sync at Primary Data Centre ***(Mandatory)***	
8.	PITR working in DB SR Server at Primary Data Centre ***(Mandatory)***	
9.	MongoDB Replication and/or Sharding working ***(Mandatory)***	
10.	Backups (/Uploads) running and in sync at Primary Data Centre ***(Mandatory)***	
11.	Backups (/eOffice) running and in sync at Primary Data Centre ***(Mandatory)***	
12.	Backups (/Logs) running and in sync at Primary Data Centre ***(Mandatory)***	
13.	Offline Backups running ***(Mandatory)***	
14.	DB replication working and in sync at Remote Data Centre ***(Mandatory)***	
15.	PITR working in DB SR Server at Remote Data Centre ***(Mandatory)***	
16.	Backups (/Uploads) running and in sync at Remote Data Centre ***(Mandatory)***	
17.	Backups (/eOffice) running and in sync at Remote Data Centre ***(Mandatory)***	
18.	Backups (/Logs) running and in sync at Remote Data Centre ***(Mandatory)***	
19.	CRONS working	
20.	DB Maintenance Scripts working	
21.	Email & SMS Alerts working (if configured)	
22.	CRL Downloading working (if configured)	
23.	Revision in Deployment Document and sharing with eOffice PMU (if applicable)	
24.	Configured in Monitoring Tools	
25.	Latest Applications version deployed	
26.	Servers VA done and patched	

ANNEXURE–D (ROLES AND RESPONSIBILITIES)

1. Roles and Responsibilities For Type I Deployments

S.No.	Activity/Service	Responsibility	Remarks
1.	Allocation of VMs and Storage	ESA	Subject to availability and approval
2.	Configuring and making VMs ready	ESA	
3.	Allotment of Public/Private IPs to VMs	ESA + NDC	
4.	Time syncing with NTP	ESA	
5.	Firewall rules placement	ESA+ CSG NIC	Ensure Audit certificate is available
6.	DNS registration	ESA	
7.	Generation and Deployment of SSL Certificate	ESA	
8.	eOffice Stack deployment	ESA	
9.	Activation Key deployment and downloading of eOffice Activation Revocation file	ESA	
10.	Parichay/LDAP Bind String configuration	ESA	Subject to forwarding of LDAP Bind String by user department to ESA
11.	DB SR and DB LR setup	ESA	
12.	PITR setup	ESA	
13.	MongoDB setup	ESA	
14.	Logs Server configuration	ESA	
15.	Backups Servers configuration	ESA	
16.	CRONS scheduling	ESA	
17.	eOffice Data Offline Backups scheduling at DC	ESA +NDC	
18.	Email & SMS Alerts configuration	ESA	
19.	CRL configuration	ESA	
20.	eSign configuration	ESA	Subject to receiving of Application ID and ASP ID from eSign Division
21.	Creation and revision of Deployment Document	ESA	
22.	Registering with Data Centre Monitoring Tools like Nagios, Zabbix, etc.	ESA	
23.	Monitoring and trouble shooting	ESA	
24.	Server maintenance and management	ESA + NDC	Network and DC specific issues will be coordinated with NDC team.
25.	Release management	ESA	This will be a planned activity with advance intimation.
26.	Configuration of DB Scripts for showcasing eOffice Usage Statistics	ESA	
27.	Timely submission of Check Lists (Annexure-B) to PMU	ESA	
28.	Servers VA and patching	ESA	

2. Roles and Responsibilities for TYPE II & III Deployments

S. No.	Activity/Service	Responsibility	Remarks
1.	H/W procurement and shipping	Department	
2.	Placing servers in DC	DC	
3.	Necessary network and infrastructure setup	DC	
4.	H/W assembling, RAID configuration and Firmware upgradation of servers	Department	
5.	Management IP assignment (OA/ILO)	DC	
6.	Hypervisor installation on servers	Local Admin Team/PMS	If applicable
7.	IP allocation to servers	DC	
8.	Storage allocation	DC	
9.	VMs/Servers and Storage provisioning	Local Admin Team/ PMS	
10.	Network configuration	Local Admin Team/ PMS	
11.	Time syncing with NTP	Local Admin Team/ PMS	
12.	Firewall rules placement	Local Admin Team/ PMS	
13.	Load Balancer configuration	DC & Local Admin Team/ PMS	If applicable
14.	Yum repository creation	Local Admin Team/ PMS	
15.	DNS registration and mapping	Department & Local Admin Team/ PMS	
16.	Generation and Deployment of SSL Certificate	Local Admin Team/ PMS	
17.	Remote access of servers to ESA	Local Admin Team/ PMS	If required
18.	eOffice Stack deployment	Local Admin Team/ PMS	ESA will provide training to the Local Admin Team & will supervise the installation. However, ESA team's role during supervision will be limited to specific issue resolution only.
19.	Activation Key deployment and downloading of eOffice Activation Revocation file	Local Admin Team/ PMS	
20.	Secondary LDAP setup	LDAP Group & Local Admin Team/ PMS	If required
21.	Parichay/LDAP Bind String configuration	Local Admin Team/ PMS	
22.	DB SR and DB LR setup	Local Admin Team/ PMS	
23.	PITR setup	Local Admin Team/ PMS	
24.	MongoDB setup	Local Admin Team/ PMS	
25.	Logs Server configuration	Local Admin Team/ PMS	
26.	Backups Servers configuration	Local Admin Team/ PMS	
27.	CRONS scheduling	Local Admin Team/ PMS	
28.	eOffice Data Offline Backups scheduling at DC	DC & Local Admin Team/ PMS	
29.	Email & SMS Alerts configuration	Local Admin Team/ PMS	If required
30.	CRL configuration	Local Admin Team/ PMS	If required

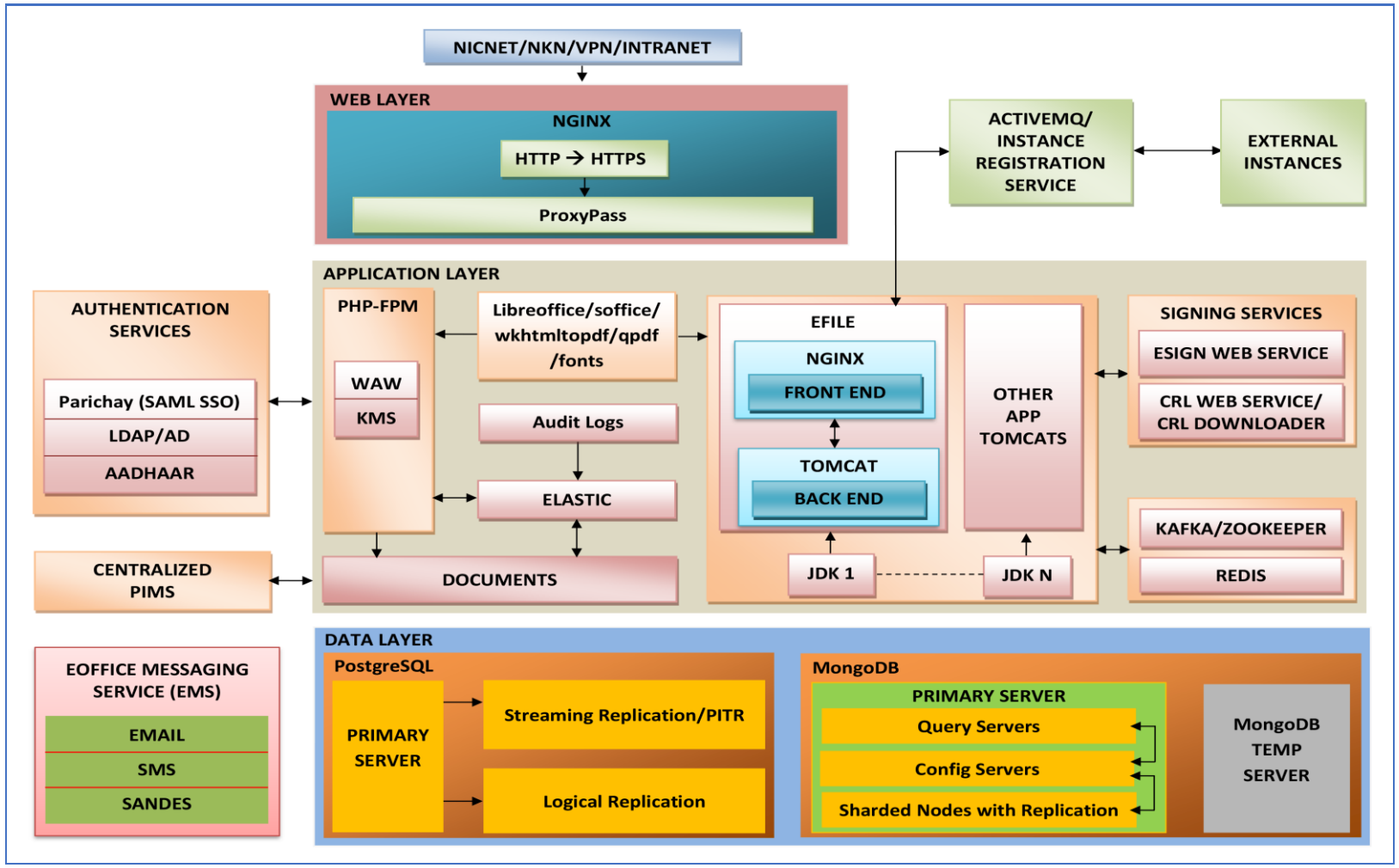
31.	eSign configuration	Local Admin Team/ PMS	If required
32.	Creation and revision of Deployment Document and sharing with eOffice PMU	Local Admin Team/ PMS	
33.	Registering with Data Centre Monitoring Tools	Local Admin Team/ PMS	If required
34.	Starting of services and Go live	Department & Local Admin Team/ PMS	
35.	Disaster Recovery setup	DC & Local Admin Team/ PMS	If applicable
36.	Monitoring and trouble shooting	Local Admin Team/ PMS	ESA team can provide support for specific issue resolution only
37.	Performance and availability Issues	Local Admin Team/ PMS	ESA team will provide support for specific issue resolution only
38.	Data ownership	Department	
39.	Release management	Local Admin Team/ PMS	This will be a planned activity with advance intimation. The release document will be provided by ESA team.
40.	Configuration of XML Scripts for showcasing eOffice Usage Statistics	Local Admin Team/ PMS	
41.	Timely submission of Check Lists (Annexure-B) to PMU	Local Admin Team/ PMS	
42.	Servers VA and patching	Local Admin Team/ PMS	

ANNEXURE-E (EOFFICE DEPLOYMENT READY RECKONER)

eOffice Deployment Ready Reckoner				
Deployment Type	**Scope**	**Hosting**	**Activities**	**Annexures**
Type I	**Central Government Line Ministries/Departments/Apex Bodies**	**eOffice Cloud**	• **Approval by concerned NIC Cell/Division.** • **Provision of resources by NDC/eOffice** • **New updates from eOffice as and when available**	**Annexure-A** **Annexure-B** **Annexure-C** **Annexure-D**
Type II	**Any Government Organization/PSU**	**NIC/NICSI Data Centres/Partner Organization's Data Centre**	• **Approval by concerned NIC Cell/Division.** • **Provision of resources by NDC Team and Partner Organization.** • **Taking of PMS by the department for eOffice deployment and system support** • **New updates from eOffice as and when available**	**Annexure-A** **Annexure-B** **Annexure-C** **Annexure-D**
Type III	**Any Government Organization/PSU**	**State Data Centre (SDC) / Local Data Centre (LDC) / any other data centre or cloud environment**	• **Approval by concerned NIC Cell/Division.** • **Provision of resources by department** • **Constitution of a dedicated System Administration Team by the department for eOffice deployment and system support** • **New updates from eOffice as and when available**	**Annexure-A** **Annexure-B** **Annexure-C** **Annexure-D**

ANNEXURE-F (ARCHITECTURE AND DESCRIPTION)

eOffice Server Architecture



Technology Description

1. **PostgreSQL:** This RDBMS is used as primary data store for eOffice applications which stores all transactional, workflow and metadata of eOffice application.

    a. **Primary/Master Database server:** This is the primary database for all eOffice applications. Use of PostgreSQL 14 also made database performance far better.
    b. **Streaming Replication Server:** The Streaming Replication is just the exact copy (asynchronous) of the Primary DB server and it is available in read-only mode. It can be used as failover, in case Primary server goes down.
    c. **Logical Replication Server:** LR server has been setup in multiple publication mode so that replication can be smoother. Also, LR can be extensively used for eFile application to reduce the burden of primary db server.

2. **MongoDB:** MongoDB is a general purpose, document-based, distributed database. For eOffice, it is used to store all documents being uploaded by users. It enables high-availability and scalability of eOffice documents by allowing sharding and replica set.

3. **NGINX**: It is a web server used as a reverse proxy, load balancer and HTTP cache for eOffice applications.

4. **Redis:** Redis is an in-memory data structure project implementing a distributed, in-memory key-value database with optional durability. In eOffice, Redis is used as cache server for caching of metadata and frequently used data of eFile application in RAM to improve the performance of eFile application.

5. **ZooKeeper/Kafka:** Zookeeper acts as a centralised service and is used to maintain Kafka queues used by eFile application. Kafka Queues are used for communication among internal modules of eFile.

6. **Elastic:** Elasticsearch is a distributed, RESTful search and analytics engine capable of addressing a growing number of use cases. As the heart of the Elastic Stack, it centrally stores your data for lightning-fast search, fine-tuned relevancy, and powerful analytics that scale with ease.

7. **ActiveMQ:** ActiveMQ is a popular open-source messaging service that is built on top of Java. It works as a message-oriented middleware (MoM). It is being used in eFile application for interdepartmental eFile exchange.

eOffice Project Divison
National Informatics Centre

Ministry of Electronics and Information Technology
A-Block, CGO Complex, Lodhi Road, New Delhi - 110003, India
Email ID: eoffice-pmu@nic.in