CDAC Disaster Recovery (DR) Solutions

Cost effective recovery for critical data

1. C-DAC Revival : A traditional disaster recovery software solution.

C-DAC Revival is an end to end DR solution, best suited for database intensive e-Gov and Business applications. C-DAC Revival makes use of synchronous and semi-synchronous replication to achieve optimal business continuity with zero recovery point objective (RPO) and negligible recovery time objective (RTO). It uses iSCSI over TCP/IP to provide block replication at remote site. It is interoperable with legacy hardware systems including SAN boxes and works very well with database based applications. C-DAC Revival can be used to manage planned and unplanned outage, enabling 24x7 data availability. With this business can provide long term continuity and availability, performance, productivity and customer satisfaction.

C-DAC Revival product ranges are :

- **C-DAC Revival Sync:** Real-time synchronous block replication over IP network from C-DAC Revival DC to C-DAC Revival DR located within 50 km to provide zero recovery point objective**.**

- **C-DAC Revival Semi-sync :** Real-time semi-synchronous block replication over IP network from C-DAC Revival DC to C-DAC Revival DR over WAN distances and provides negligible recovery point objective bounded by network delay.

- **C-DAC Revival Optimal DR :** Combination of synchronous and semi-synchronous block replication over IP network with three tier architecture to provide zero recovery point objective over WAN.
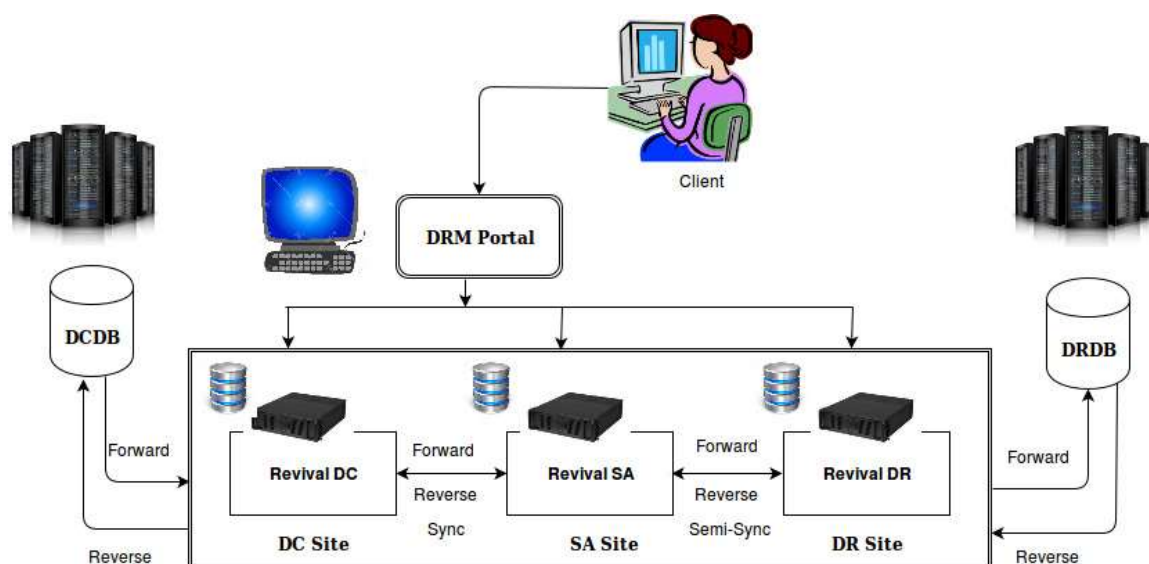

C-DAC Revival Optimal DR

C-DAC Revival Product Details

	C-DAC Revival Sync	C-DAC Revival Semi-Sync	C-DAC Revival Optimal-DR
Replication Type	Synchronous	Semi-Synchronous	Combination of synchronous and Semi-Synchronous with re-compression technique
Replication support	Two way (Forward and Reverse)	Two way (Forward and Reverse)	Two way (Forward and Reverse)
Architecture Type	2 site with two Revival agents at respective site (Revival DC and Revival DR)	2 site with two Revival agents at respective site (Revival DC and Revival DR)	3 site with three Revival agents at respective site (Revival DC , Revival SA and Revival DR)
Maximum recommended distance	50 Kilometers	Unlimited	Unlimited
RPO	Zero	Negligible (Depends upon network latency and data rate)	Zero
RTO	Negligible: Bounded by network latency	Negligible: Bounded by network latency	Negligible: Bounded by network latency
Failover	Fully Automated using CDAC DRM	Fully Automated using CDAC DRM	Fully Automated using CDAC DRM
Failback	Fully Automated using CDAC DRM	Fully Automated using CDAC DRM	Fully Automated using CDAC DRM
Data consistency at remote site	Maintains data consistency at both sites	Data consistency depends on network latency and data rate	Maintains data consistency at all sites
WAN optimization	N/A	Data compression / recompression technique is used	Data compression / recompression technique is used
Application /database interaction	Using iSCSI device drivers	Using iSCSI device drivers	Using iSCSI device drivers

2. C-DAC Revival as a Service over cloud: Cost effective service oriented DR software solution

Revival as a service over cloud is a three tier architecture with Revival DR agent designed to support multiple tenants in a service oriented approach. It is a SaaS solution interoperable with various cloud architectures like VMware, Microsoft, Openstack, Eucalyptus etc. Similar to Revival, Revival as a Service is also based on TCP/iSCSI protocol for block data replication at remote site and is best suitable for database based applications.

C-DAC Revival as a Service over Cloud
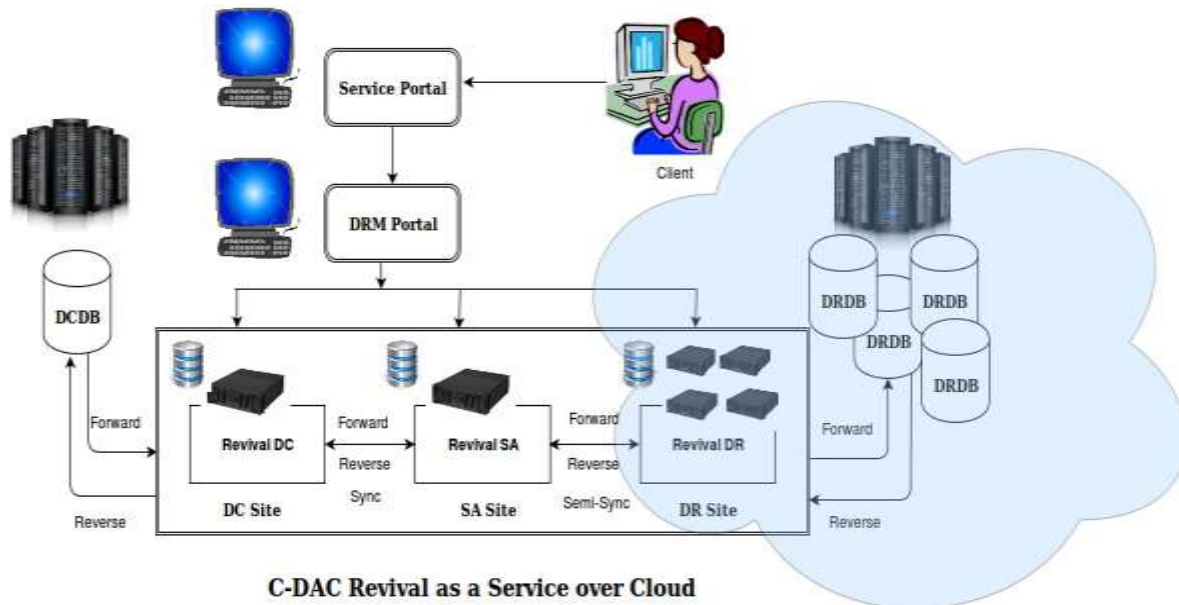
3. C-DAC DRM : Software web solution for DR management and monitoring

C-DAC DRM is a centralized DR management and monitoring web application designed to manage DR related activities. Various DR drill activities such as Normal copy , reverse normal copy, switchover, switchback, failover ,failback are fully automated through DRM. One can monitor entire DR setup of various DR deployments through DRM, which reduces manual intervention often prone to human errors and helps in effortless monitoring of entire DR setup. DRM provides report generation of the activities carried out and alert/notification for critical events via sms and email.

C-DAC DR Solution technical details:

- C-DAC DR solution uses a patented (filed) , award winning and indigenously developed replication technology.
- Supports Disaster Recovery for widely used databases such as Oracle, PostgreSQL, MSSQL and MySQL.
- Supports both forward (from Primary site to secondary site) and reverse(from secondary site to primary site) replication.

- Ensures zero RPO and negligible RTO with its three site architecture of replication solution and online replication and recovery of database data.
- Provides ordered data delivery of write operations.
- Efficient network utilization using WAN optimization.
- Eliminates vendor lock-in as C-DAC DR solution is interoperable with VMWare, OpenStack and Microsoft cloud.

Cost Saving

- No need of extra network connection infrastructure as data is replicated over Ethernet.
- Cost effective solution with generic hardware and infrastructure requirements.
- Saving on cost by sharing solution for multiple applications due to multi-tenancy of the solution.

Accolades and Achievements

- C-DAC Revival has been awarded as runner up in NASSCOM Innovation Awards in category of New Technology Advancement in 2012.
- C-DAC Revival is ISMS (ISO 27001) complied under NSDG project.
- Successfully deployed C-DAC Revival in NSDG(e-Sangam) on 9th June 2012 and handled many disaster situations by ensuring zero RPO.
- Successfully conducted live POCs for many e-Gov applications such as e-Pramaan, CMRF, Marathi Bhasha.
- Deployment for e-Pramaan application is ongoing.
- Recommended for RTI online, MSRTC, GRAS and Grievance Redressal.

Abbreviation /Acronym	Full Form
DC	Data centre (primary site)
DR	Remote Data centre (secondary/remote site)
SA	Staging appliance (to be used between DC and DR)
DRM	Disaster recovery management and monitoring portal
DC DB	Database at primary site
DRDB	Database at secondary site
iSCSI	Internet SCSI protocol
NSDG	National Service Delivery Gateway
CMRF	Chief Minister Relief Fund
ISMS	Information security management system (ISO 27001)
RPO	Recovery point objective
RTO	Recovery time objective
MSRTC	Maharashtra State Road Transport Corporation
GRAS	Government Receipt Accounting System