Transition from Reactive IT-DR to Proactive Technology Resilience

Building Always-On Operational Survivability Across the Enterprise

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Executive Summary

This presentation outlines DCAG's strategy for converting passive IT disaster recovery into a proactive, always-on Technology Resilience posture — ensuring continuous operational survivability.

Why Traditional DR Falls Short

Reactive recovery models cannot keep pace with ransomware, cloud dependencies, and AI-driven threats.

Technology Resilience as Survivability

Shift from restoring after failure to preventing, containing, and operating through disruption.

Secure by Design & Left of Boom

Engineer resilience from the start — anticipate and mitigate threats before they strike.

Resilience in SDLC & Operations

Integrate recovery validation, supply chain checks, and chaos engineering across every stage.

Automation & Continuous Validation

Replace manual processes with orchestrated failover, real-time telemetry, and immutable evidence.

Executive Overview

Converting from a Passive IT-DR Strategy to Proactive Technology Resilience

Reactive IT-DR

- Manual recovery plans
- Post-incident response
- Annual test cycles
- Siloed recovery teams

The Transition

- Risk-driven prioritization
- Cross-functional alignment
- Technology modernization
- Cultural shift to resilience

Proactive Resilience

- Automated failover
- Continuous validation
- Built-in recoverability
- Always-on survivability

The Failure of Traditional IT/DR

Current Challenges

- Reactive recovery cannot match modern threat velocity
- Manual runbooks fail under real incident pressure
- Ransomware, cloud outages, and AI-enabled attacks exploit recovery gaps
- Increasing operational overload on already stretched teams
- Annual testing provides false confidence in readiness

Reactive DR vs. Technology Resilience

Dimension	Reactive DR	Tech Resilience
Approach	Restore after failure	Prevent & survive
Testing	Annual / periodic	Continuous validation
Recovery	Manual runbooks	Automated failover
Scope	IT-centric	Enterprise-wide
Evidence	Compliance docs	Immutable telemetry

Technology Resilience Defined

Continuous operational continuity through prevention, containment, degraded operations, automated failover, and validated recoverability — governed by telemetry and immutable evidence.

Prevention

Proactive controls stop threats before impact

Containment

Isolate and limit blast radius of incidents

Degraded Ops

Maintain critical functions during disruption

Auto Failover

Orchestrated switchover without manual steps

Validation

Continuous proof that recovery is working

Governance

Telemetry and evidence for audit and compliance

Secure by Design

Building security and recoverability into systems from inception — not bolting it on afterward.

Policy-as-Code

Codify security policies into automated, enforceable rules that travel with the infrastructure.

Immutable Infrastructure

Deploy infrastructure that cannot be modified in place — replace rather than patch.

Zero Trust

Verify every access request regardless of origin — never assume trust.

Segmentation & Isolation

Limit blast radius through network and application segmentation.

Built-in Recoverability

Design recovery mechanisms as first-class system components, not afterthoughts.

Continuous Validation

Verify security posture in real time through automated testing and monitoring.

Left of Boom

Shifting focus to threat anticipation before disruption occurs — everything that happens before the incident.

Threat Anticipation

Continuously identify and assess emerging threats before they materialize into incidents.

Dependency Risk Mapping

Map and monitor all critical dependencies, supply chains, and single points of failure.

Vulnerability Mitigation

Remediate vulnerabilities in development and staging — never in production under pressure.

Recovery Gap Analysis

Measure the delta between documented recovery plans and actual recovery capability.

Predictive Survivability

Use data-driven models to forecast operational resilience under various threat scenarios.

CAF / CDF / CBRF Framework

An integrated operational survivability framework with three core factories.

CAF

Controlled Application Factory

Standardized, secure application delivery pipeline with built-in resilience testing, SBOM tracking, and automated deployment validation.

CDF

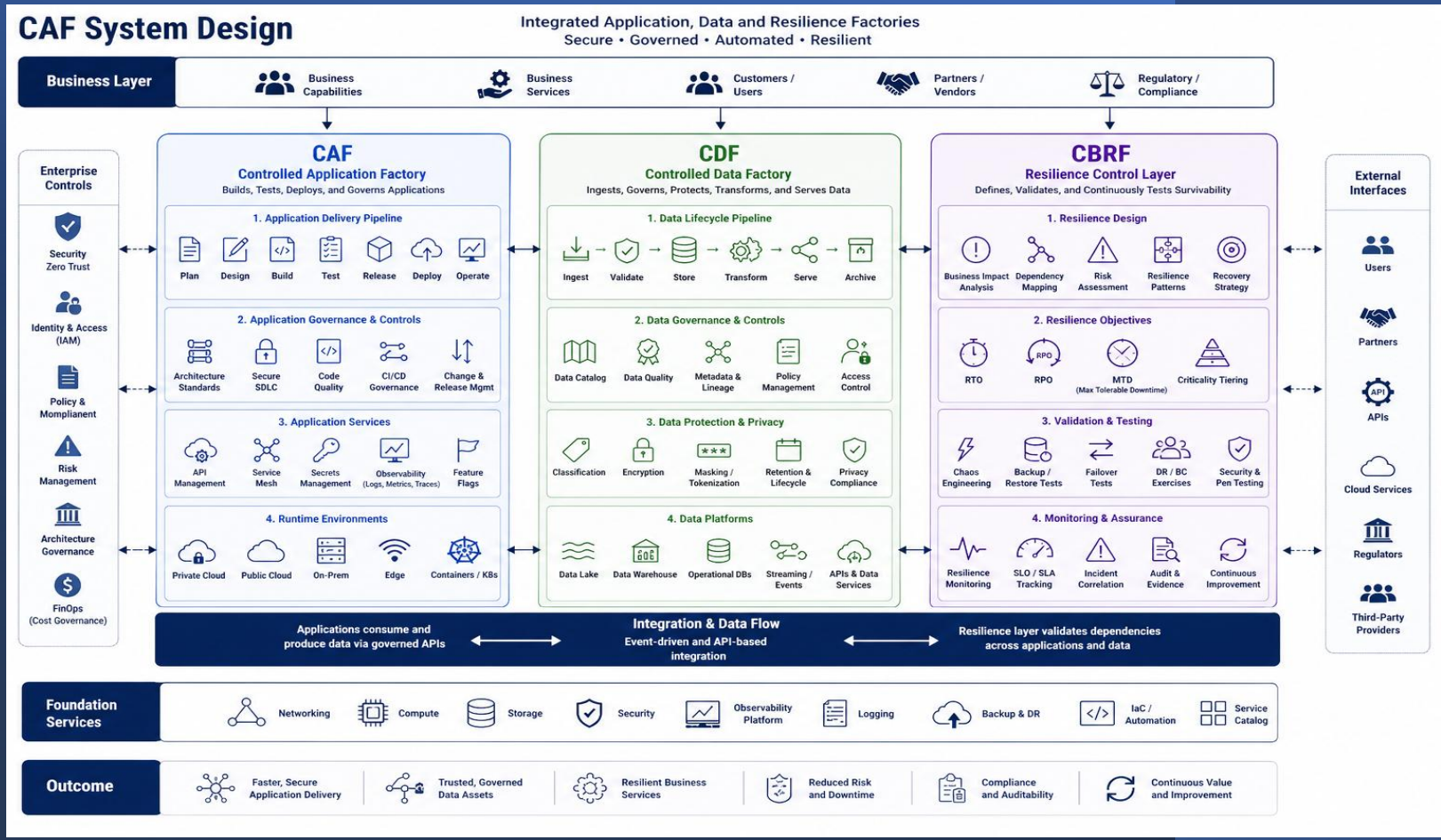
Controlled Data Factory

Governed data lifecycle management ensuring data integrity, availability, immutable backups, and recovery-ready data stores at all times.

CBRF

Controlled Business Resilience Factory

Enterprise-wide resilience orchestration connecting business continuity, disaster recovery, and operational survivability into one framework.


CAF System Design
Integrated Application, Data and Resilience Factories
Secure • Governed • Automated • Resilient
Business Layer
Business Capabilities
Business Services
Customers / Users
Partners / Vendors
Regulatory / Compliance
Enterprise Controls
Security Zero Trust
Identity & Access (IAM)
Policy & Momplianent
Risk Management
Architecture Governance
FinOps (Cost Governance)
CAF
Controlled Application Factory
Builds, Tests, Deploys, and Governs Applications
1. Application Delivery Pipeline
Plan
Design
Build
Test
Release
Deploy
Operate
2. Application Governance & Controls
Architecture Standards
Secure SDLC
Code Quality
CI/CD Governance
Change & Release Mgmt
3. Application Services
API Management
Service Mesh
Secrets Management
Observability (Logs, Metrics, Traces)
Feature Flags
4. Runtime Environments
Private Cloud
Public Cloud
On-Prem
Edge
Containers / KBs
CDF
Controlled Data Factory
Ingests, Governs, Protects, Transforms, and Serves Data
1. Data Lifecycle Pipeline
Ingest
Validate
Store
Transform
Serve
Archive
2. Data Governance & Controls
Data Catalog
Data Quality
Metadata & Lineage
Policy Management
Access Control
3. Data Protection & Privacy
Classification
Encryption
Masking / Tokenization
Retention & Lifecycle
Privacy Compliance
4. Data Platforms
Data Lake
Data Warehouse
Operational DBs
Streaming / Events
APIs & Data Services
CBRF
Resilience Control Layer
Defines, Validates, and Continuously Tests Survivability
1. Resilience Design
Business Impact Analysis
Dependency Mapping
Risk Assessment
Resilience Patterns
Recovery Strategy
2. Resilience Objectives
RTO
RPO
MTD (Max Tolerable Downtime)
Criticality Tiering
3. Validation & Testing
Chaos Engineering
Backup / Restore Tests
Failover Tests
DR / BC Exercises
Security & Pen Testing
4. Monitoring & Assurance
Resilience Monitoring
SLO / SLA Tracking
Incident Correlation
Audit & Evidence
Continuous Improvement
External Interfaces
Users
Partners
APIs
Cloud Services
Regulators
Third-Party Providers
Applications consume and produce data via governed APIs
Integration & Data Flow
Event-driven and API-based integration
Resilience layer validates dependencies across applications and data
Foundation Services
Networking
Compute
Storage
Security
Observability Platform
Logging
Backup & DR
IaC / Automation
Service Catalog
Outcome
Faster, Secure Application Delivery
Trusted, Governed Data Assets
Resilient Business Services
Reduced Risk and Downtime
Compliance and Auditability
Continuous Value and Improvement

Embedding Resilience Into the SDLC

Embedded Controls Across Every Stage

Recovery Validation
Automated tests verify recoverability at every deployment gate

SBOM & Supply Chain
Track every component and dependency for vulnerability exposure

Chaos Engineering
Inject controlled failures to prove resilience before production

CTEM / cATO
Continuous threat exposure management and authorization to operate

Continuous Monitoring
Real-time observability across the entire application lifecycle

Recovery Time Capability (RTC)

Moving beyond theoretical RTO/RPO to measure what your organization can actually recover in real conditions.

RTO / RPO

Theoretical Target

What plans say should happen — often untested assumptions

RTC

Measured Capability

Real-world performance validated through exercises and automation

Team Readiness

Skills validation and response drills

Vendor Coordination

Responder SLAs and integration testing

Automation Impact

Measurable RTC reduction through orchestration

Automated Recovery Operations

Detect ▶ Decide ▶ Contain ▶ Failover ▶ Recover ▶ Validate ▶ Report ▶ Improve

Orchestration Engines

Centralized automation platforms coordinate recovery across all tiers and dependencies in sequence.

Runbook Automation

Codified recovery procedures execute consistently without manual interpretation or human error.

AI-Assisted Monitoring

Machine learning detects anomalies and triggers automated response before human escalation.

Self-Healing Systems

Infrastructure automatically detects degradation and remediates without manual intervention.

Business Continuity Dashboarding

Real-time executive visibility into continuity posture, compliance, and recovery readiness.

BCM Project Status

Track progress across all business continuity management initiatives.

Plan Development

Monitor recovery plan creation, updates, and approval status.

Testing Schedules

Upcoming and completed exercise tracking with gap analysis.

Recovery Readiness

Real-time assessment of organizational recovery capability.

Compliance Status

Alignment tracking against ISO 22301, NIST, and other frameworks.

Open Gaps & POA&Ms

Prioritized remediation tracking for known deficiencies.

DR Plan Lifecycle Management

01	**Initiation**	Establish program scope, sponsors, and governance structure
02	**Risk Assessment**	Identify threats, vulnerabilities, and potential business impacts
03	**Business Impact Analysis**	Determine critical processes, RTOs, RPOs, and dependencies
04	**Plan Development**	Create detailed recovery strategies and procedures
05	**Validation & Testing**	Exercise plans through progressively complex scenarios
06	**Maintenance**	Continuous updates triggered by changes and lessons learned
07	**Governance Reporting**	Executive dashboards, compliance evidence, and audit support

Training & Readiness

Preparing every stakeholder group to execute their role in recovery and resilience operations.

Recovery Teams

Hands-on technical training, exercise participation, and skill certification for primary recovery personnel.

Vendors & Partners

Integration testing, SLA validation, and coordinated exercise participation with third-party providers.

First Responders

Incident detection, initial triage, escalation procedures, and communications protocols.

Clients & Stakeholders

Expectations management, communication plans, and business continuity awareness programs.

Executive Leadership

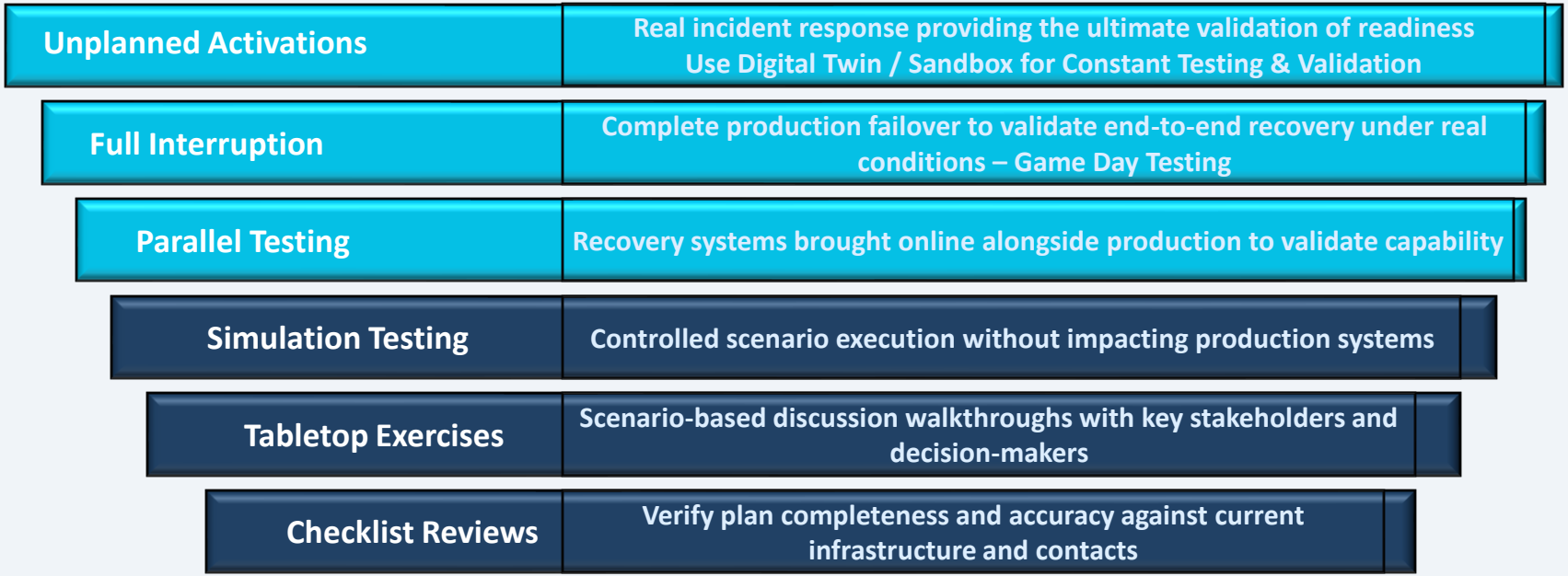
Crisis decision-making, fiduciary responsibilities, regulatory obligations, and strategic oversight.

Technical Staff

Application-specific recovery procedures, infrastructure rebuild, and data restoration techniques.

Testing Methodologies

Progressive testing maturity from documentation reviews through full operational validation.



Threat Landscape

The evolving threats driving the urgency for proactive technology resilience.

Ransomware

Encrypted data and systems held hostage with increasing sophistication and double-extortion tactics.

Supply Chain Attacks

Compromised third-party software and services propagating risk through trusted channels.

Insider Threats

Malicious or negligent internal actors with privileged access to critical systems and data.

Cloud Outages

Concentrated dependency on cloud providers creating single points of catastrophic failure.

AI-Enabled Threats

Machine learning accelerating attack development, deepfakes, and automated vulnerability exploitation.

Post-Quantum Risk

Emerging quantum computing capabilities threatening current encryption and security foundations.

Governance & Compliance

Aligning technology resilience with industry standards and executive fiduciary oversight.

ISO 22301

Business continuity management systems — the international standard for organizational resilience.

ISO 27001, ISO 20771, NIST SP 800-171

Information security management providing the governance foundation for technology resilience.

NIST CSF 2.0

Cybersecurity framework with expanded recover function aligned to resilience principles.

NIST SP 800-34, SP 800-53

Contingency planning guide for federal information systems and critical infrastructure.

C-SCRM, TPRM, VRM, Supply Chain

Cyber supply chain risk management addressing third-party and vendor resilience requirements.

Executive Oversight

Fiduciary responsibility for operational resilience including board-level reporting and governance.

Operational Survivability Dashboard

Service Availability

Real-time uptime and availability tracking across all critical services and infrastructure.

Recovery Readiness

Composite score measuring organizational preparedness for recovery operations.

Vulnerability Exposure

Active vulnerability counts, patching cadence, and remediation timelines.

Exercise Performance

Recovery exercise results, RTC measurements, and trend analysis over time.

Team Readiness

Training completion, certification status, and personnel availability metrics.

Financial Impact

Downtime cost tracking, risk quantification, and resilience investment ROI.

Cost vs. Benefit

The business case for investing in proactive technology resilience.

Downtime Reduction

Dramatically reduce recovery times through automated failover and continuous readiness validation.

Staff Efficiency

Free teams from manual recovery procedures to focus on innovation and improvement.

Automation Savings

Reduce operational costs through orchestrated recovery, automated testing, and self-healing systems.

Faster Recovery

Measured RTC improvements translate directly to reduced business interruption and revenue loss.

Compliance Risk

Continuous evidence generation reduces audit costs, regulatory risk, and compliance gaps.

Customer Trust

Demonstrable resilience strengthens client confidence, retention, and competitive positioning.

Future State Maturity Model

1 **Reactive DR**

Ad-hoc recovery, manual processes, minimal documentation

2 **Documented Recovery**

Formal plans exist, periodic testing, basic governance

3 **Integrated Resilience**

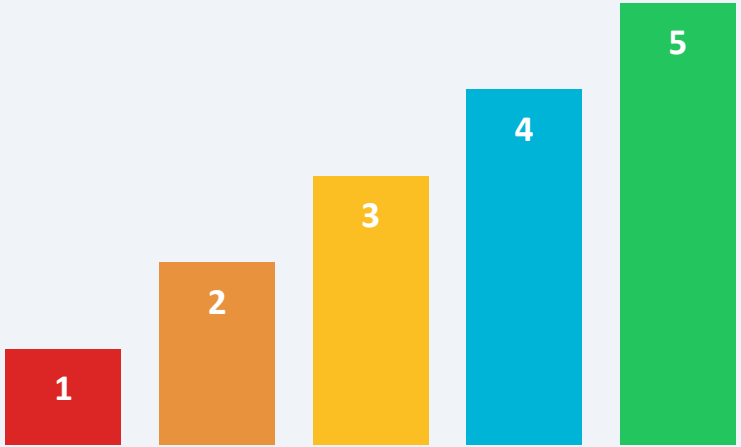
Cross-functional alignment, embedded in SDLC, automated testing

4 **Automated Resilience**

Orchestrated failover, continuous validation, self-healing capabilities

5 **Adaptive Survivability**

Predictive resilience, AI-driven, always-on operational survivability



Call to Action

- Transition from recovery to survivability — make resilience the operational default
- Engineer resilience into enterprise operations at every layer and lifecycle stage
- Build continuously validated recoverability with automated testing and telemetry
- Modernize BCM, DR, and operational governance for always-on protection

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