

# Backup/DR Services - Leap (Policy Driven DR / Run Books)

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The Nutanix Leap feature provides policy driven backup, DR and run book automation services configured via Prism Central (PC). This capability builds upon and extends the native DR and replications features that have been available in AOS and configured in PE for years. For more information on the actual back-end mechanism being leveraged for replication, etc. refer to the 'Backup and Disaster Recovery (DR)' section in the 'AOS' section. Leap was introduced in AOS 5.10.

## Test Drive

For those who are interested in getting hands on, take it for a spin with Nutanix Test Drive!

<https://www.nutanix.com/test-drive-disaster-recovery>

## Supported Configurations

The solution is applicable to the configurations below (list may be incomplete, refer to documentation for a fully supported list):

Core Use Case(s):

- Policy based backups and replication
- DR run book automation
- DRaaS (via Xi)

Management interfaces(s):

- Prism Central (PC)

Supported Environment(s):

- On-Prem:
  - AHV (As of AOS 5.10)
  - ESXi (As of AOS 5.11)
- Cloud:
  - Xi (As of AOS 5.10)

Upgrades:

- Part of AOS

Compatible Features:

- AOS BC/DR features

## Key terms

The following key terms are used throughout this section and defined in the following:

- Recovery Point Objective (RPO)
  - Refers to the acceptable data loss in the event of a failure. For example, if you want an RPO of 1 hour, you'd take a snapshot every 1 hour. In the event of a restore, you'd be restoring data as of up to 1 hour ago. For synchronous replication typically an RPO of 0 is achieved.

- Recovery Time Objective (RTO)
  - Recovery time objective. Refers to the period of time from failure event to restored service. For example, if a failure occurs and you need things to be back up and running in 30 minutes, you'd have an RTO of 30 minutes.
- Recovery Point
  - A restoration point aka snapshot.

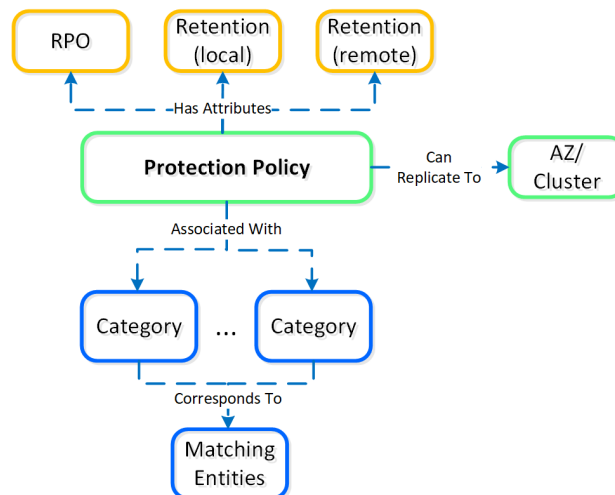
## Implementation Constructs

Within Nutanix Leap, there are a few key constructs:

### Protection Policy

- Key Role: Backup/Replication policy for assigned categories
- Description: A protection policy defines the RPO (snap frequency), recovery location (remote cluster / Xi), snapshot retention (local vs. remote cluster), and associated categories. With Protection Policies everything is applied at the category level (with a default that can apply to any/all). This is different from Protection Domains where you have to select VM(s).

The following image shows the structure of the Nutanix Leap Protection Policy:

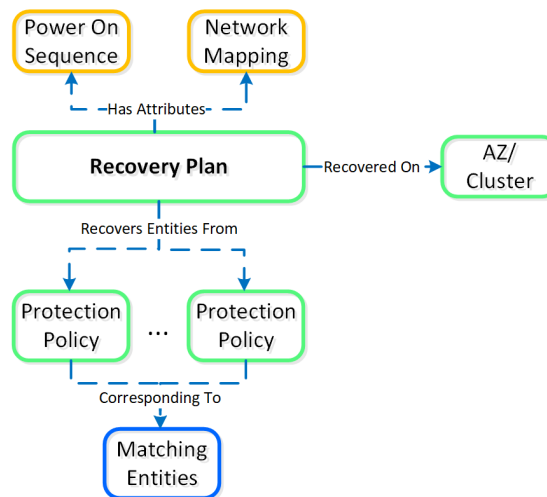


Leap - Protection Policy

### Recovery Plan

- Key Role: DR run book
- Description: A Recovery Plan is a run book that defines the power on sequencing (can specify categories or VMs) and network mapping (primary vs. recovery and test failover / failback). This is most synonymous with what people would leverage SRM for. NOTE: a Protection Policy must be configured before a Recovery Plan can be configured. This is necessary as the data must exist at the recovery site in order for it to be recovered.

The following image shows the structure of the Nutanix Leap Recovery Plan:



Leap - Recovery Plan

## Linear Retention Policy

- Key Role: Recovery Point retention policy
- Description: A linear retention policy specifies the number of recovery points to retain. For example, if the RPO is 1 hour and your retention is set to 10, you'd keep 10 hours (10 x 1 hour) of recovery points (snaps).

## Roll-up Retention Policy

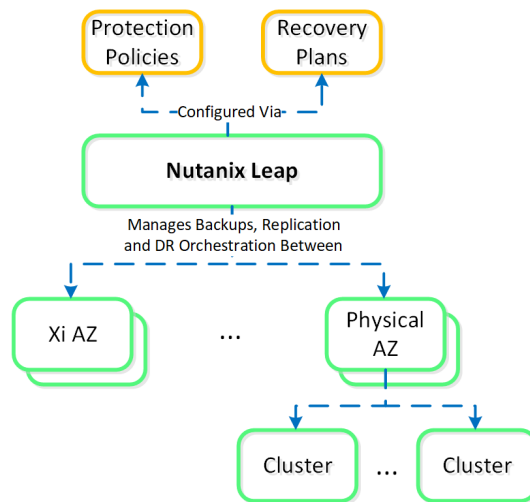
- Key Role: Recovery Point retention policy
- Description: A roll-up retention policy will "roll-up" snaps dependent on the RPO and retention duration. For example, if the RPO is 1 hour and your retention is set to 5 days it'll keep 1 day of hourly and 4 days of daily recovery points. The logic can be characterized as follows: If retention is n days, keep 1 day of RPO and n-1 days of daily recovery points. If retention is n weeks, keep 1 day of RPO and 1 week of daily and n-1 weeks of weekly recovery points. If retention is n months, keep 1 day of RPO and 1 week of daily and 1 month of weekly and n-1 months of monthly recovery points. If retention is n years, keep 1 day of RPO and 1 week of daily and 1 month of weekly and n-1 months of monthly recovery points.

### Linear vs. roll-up retention

Use linear policies for small RPO windows with shorter retention periods or in cases where you always need to be able to recover to a specific RPO window.

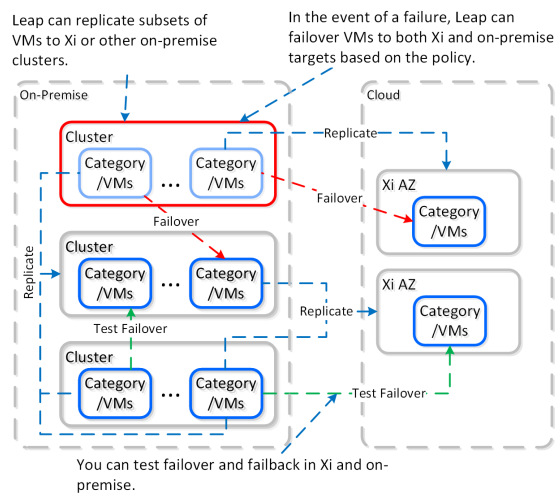
Use roll-up policies for anything with a longer retention period. They're more flexible and automatically handle snapshot aging / pruning while still providing granular RPOs for the first day.

The following shows a high-level overview of the Leap constructs:



## Leap - Overview

The following shows how Leap can replicate between on-premises and Xi:



## Leap - Topology

### Usage and Configuration

The following sections cover how to configure and leverage Leap.

The high-level process can be characterized into the following high-level steps:

1. Connect to Availability Zones (AZs)
2. Configure Protection Policies
3. Configure Recovery Plan(s)
4. Perform/Test Failover & Failback

### Connect Availability Zone(s)

The first step is connecting to an AZ which can be a Xi AZ or another PC. NOTE: As of 5.11 you will need at least 2 PCs deployed (1 for each site).

In PC, search for 'Availability Zones' or navigate to 'Administration' -> 'Availability Zones':

☰

Availability Zones

★

Availability Zones

2 Total Availability Zones

☐ ▼

Connect to Availability Zone

Type name to filter by

Leap - Connect to Availability Zone

Click on 'Connect to Availability Zone' and select the AZ Type ('Xi' or 'Physical Location' aka PC instance):

Connect to Availability Zone

?

|

×

Availability Zone Type

Select Type

▼

Xi

Physical Location

Close

Connect

Leap - Connect to Availability Zone

Input credentials for PC or Xi and click 'Connect':

Connect to Availability Zone

?

|

×

Availability Zone Type

Physical Location

⋮

IP Address for Remote PC

99.99.99.99

Username

foobar

Password

.....

Close

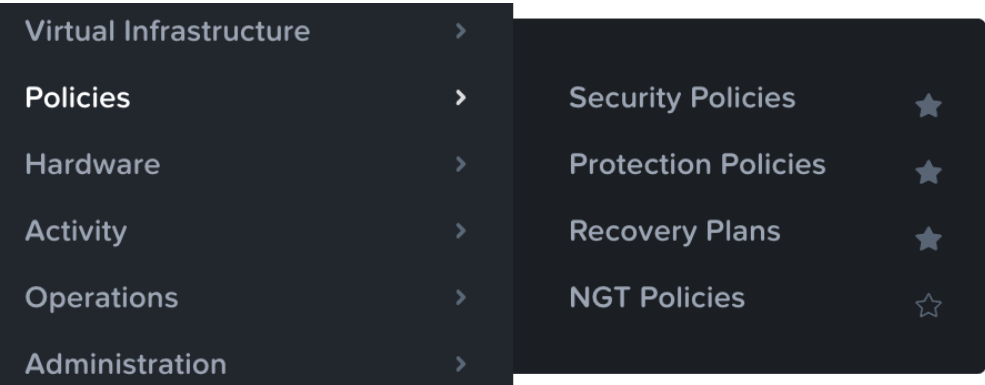
Connect

Leap - Connect to Availability Zone

The connected AZ will now be displayed and be available.

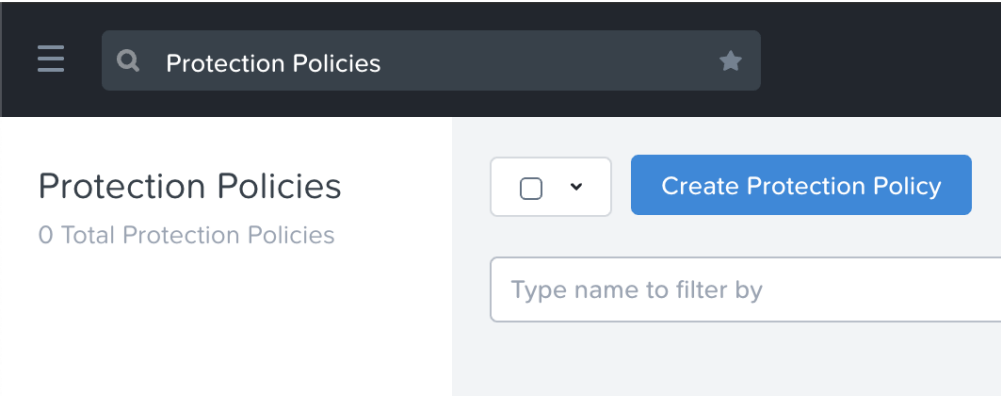
## Configure Protection Policies

In PC, search for 'Protection Policies' or navigate to 'Policies' -> 'Protection Policies':



Leap - Protection Policies

Click on 'Create Protection Policy':



Leap - Create Protection Policy

Input details for the name, recovery location, RPO and retention policy (describe previously):

Name  
myProtectionPolicy

Primary Location  
Local AZ

Recovery Location  
PC\_10.47.17.10

Target Cluster ?  
EARTH-DEV-1

When VMs failover to recovery location, reverse replication to the primary location will be initiated automatically with this same Protection Policy.

Recovery Point Objective  
Hours

Start immediately [Change](#)  
1

Retention Policy  
☐ Linear  
☒ Roll-up

Remote Retention  
6 Months  
24 hourly, 7 daily, 4 weekly, 6 monthly recovery points will be retained.

Local Retention  
5 Days  
24 hourly, 5 daily recovery points will be retained.

☒ Take App-Consistent Recovery Point ?

Leap - Protection Policy Inputs

NOTE: for Xi you don't need select a 'Target Cluster':

Name  
MyXiProtectionPolicy

Primary Location  
Local AZ

Recovery Location  
US-EAST-1B

Target Cluster ?  
autoselect

When VMs failover to recovery location, reverse replication to the primary location will be initiated automatically with this same Protection Policy.

To replicate to Xi, certain ports on your firewall may need to be opened. [Learn More](#)

Recovery Point Objective  
Hours 1

Start Immediately [Change](#)

Retention Policy  
☐ Linear  
☒ Roll-up

Remote Retention  
1 Years

24 hourly, 7 daily, 4 weekly, 12 monthly, 1 yearly recovery points will be retained.

Local Retention  
5 Days

24 hourly, 5 daily recovery points will be retained.

Current pricing level: **Premium** [View Pricing Detail](#)

☐ Take App-Consistent Recovery Point ?

Leap - Protection Policy Inputs - Xi

Next we'll select the categories for the policy to apply to:

Add Categories ✕

Select Categories

AppType:Earth\_Stack +

Environment:Production −

Close Save

Leap - Protection Policy Categories

Click 'Save' and you will now see the newly created Protection Policy:

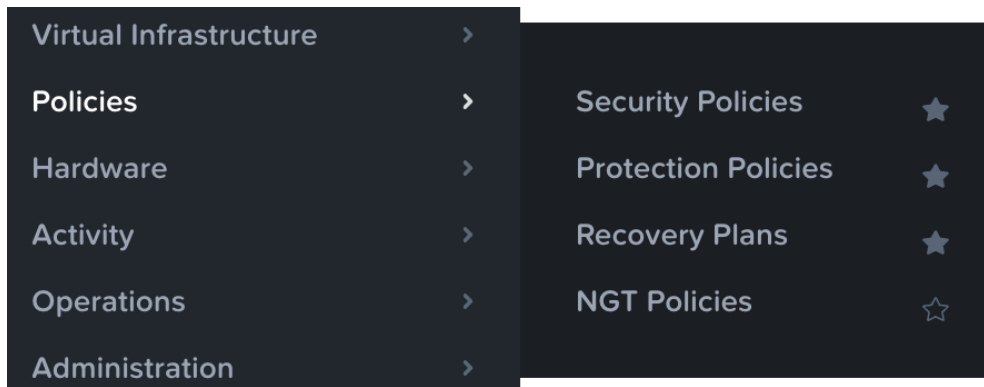
1 Total Protection Policies

<input type="checkbox"/>	Name	Primary Location	Recovery Location	RPO	Remote Retention	Local Retention
<input type="checkbox"/>	myProtectionPolicy	Local AZ	PC_10.47.17.10	1 hour(s)	6 Month(s)	5 Day(s)

Leap - Protection Policies

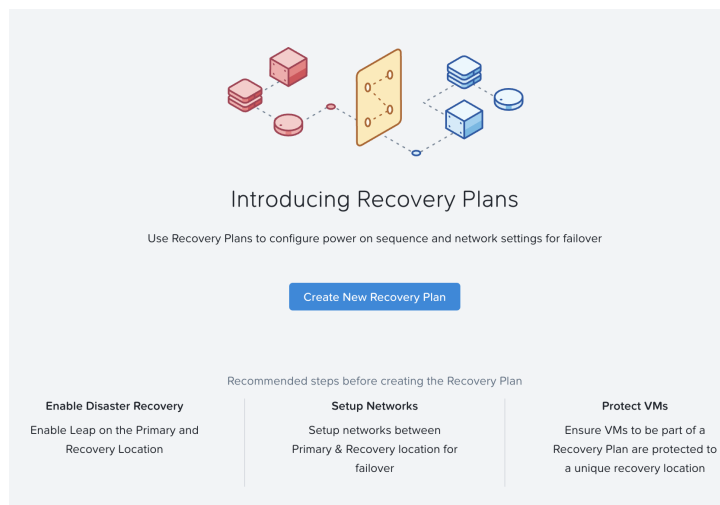
Configure Recovery Plans

In PC, search for 'Recovery Plans' or navigate to 'Policies' -> 'Recovery Plans':



## Leap - Recovery Plans

On the first launch you will be greeted with a screen to create the first Recovery Plan:



## Leap - Create Recovery Plan

Select the 'Recovery Location' using the drop down:

Select Location

Primary Location

Local AZ

Recovery Location

PC\_10.47.17.10

Close

Proceed

## Leap - Select Recovery Location

NOTE: This can be either a Xi AZ or Physical AZ (PC with corresponding managed clusters).

Input the Recovery Plan name and description and click 'Next':



1 General2 Power On Sequence3 Network Settings

Recovery Plan Name

myRecoveryPlan

Recovery Plan Description

Recovery Plan Description

Next

Leap - Recovery Plan - Naming

Next click on 'Add Entities' and specify the power on sequence:

1 General2 Power On Sequence3 Network Settings

Start by adding Entities to your Power On Sequence.

+ Add Entities

< Back

Next

Leap - Recovery Plan - Power On Sequence

Search for VMs or Categories to add to each stage:

Add Entities

Search Entities by

VM Name

VM Name

Category

Enter Search Text

Close

Add

Leap - Recovery Plan - Power On Sequence

Once the power on sequence looks good with the stages, click 'Next':

1 General2 Power On Sequence3 Network Settings

3 Stages 3 Total 12 Categories, 1 VMsAdd New Stage

STAGE 11 Total 1 VMsActions ↓ ↑

☐ Name

☐ prod-earth-db

+ Add Delay

STAGE 21 Total 1 CategoriesActions ↓ ↑

☐ Name

☐ CATEGORY AppTier DB

+ Add Delay

STAGE 31 Total 1 CategoriesActions ↓ ↑

☐ Name

☐ CATEGORY AppTier Kafka

Back

Next

Leap - Recovery Plan - Power On Sequence

Power On Sequencing

When determining the power on sequence you will want to stage things as follows:

- Stage 0: Core services (AD, DNS, etc.)
- Stage 1: Services dependent on Stage 0 services, and required for Stage 2 services (e.g. DB Tier)
- Stage 2: Services dependent on Stage 1 services, and required for Stage 3 services (e.g. App Tier)
- Stage 3: Services dependent on Stage 2 services, and required for Stage 4 services (e.g. Web Tier)
- Stage 4-N: Repeat based upon dependencies

We will now map the network between our source and target environments:

1 General2 Power On Sequence3 Network Settings

Static IP addresses will be preserved post recovery. For VMs using non IPAM networks only vNICs will be attached.

Local AZPC\_10.45.5.30

ProductionTest FailbackProductionTest Failover

Virtual Network or Port Group

3900

:

Virtual Network or Port Group

default

:

Virtual Network or Port Group

uvm

:

Virtual Network or Port Group

non-routeable2

:

Gateway IP / Prefix Length

10.19.160.1

/

24

Gateway IP / Prefix Length

10.19.160.1

/

24

Gateway IP / Prefix Length

10.45.6.1

/

24

Gateway IP / Prefix Length

10.19.160.1

/

24

Back

Done

Leap - Recovery Plan - Network Mapping

Failover / Failback Networks

In most cases you will want to use a non-routable or isolated network for your test networks. This will ensure you don't have any issues with duplicate SIDs, arp entries, etc.