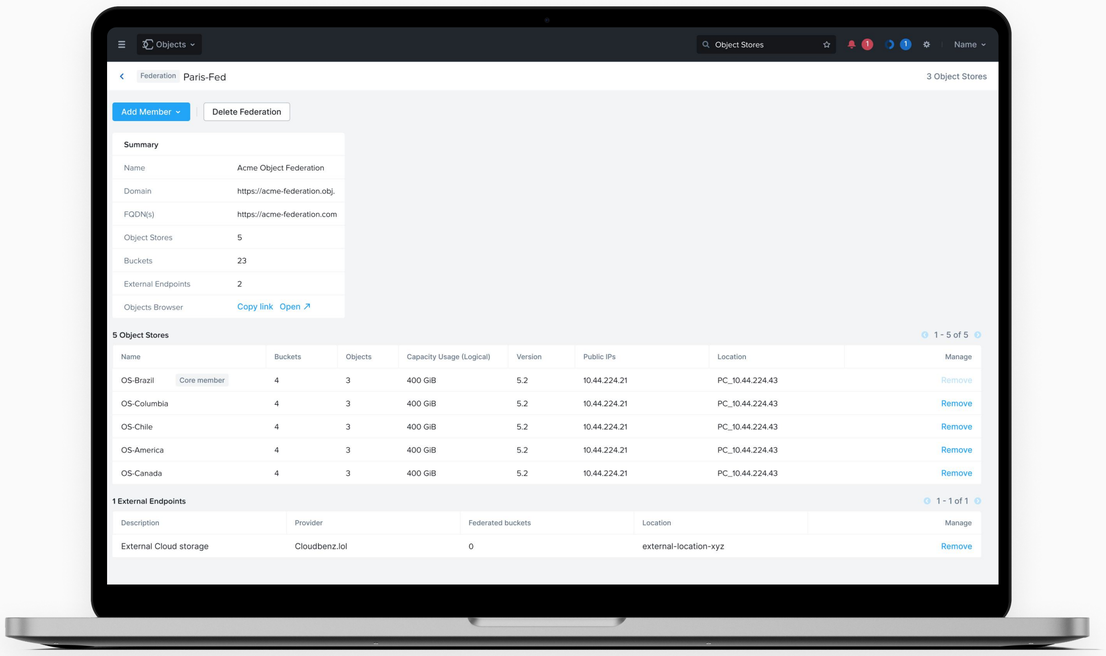
HELPING NUTANIX PROVIDE THEIR CUSTOMERS WITH A UNIFIED STORAGE ACCESS PLATFORM.



ENTERPRISE INTERNSHIP

In the summer of 2024, I worked with the amazing design team over at Nutanix, on a project that helped me challenge myself on multiple levels. During my time there, I worked on a feature that helped Nutanix using businesses access all of their storage through a single URL irrespective of the storage platform. My work included pitching ideas to decision makers like the Product Manager, regular syncs with lead developers, and project discussions with other designers.

EXTENDING FEDERATION TO THE CLOUD

DURATION
9 weeks

LOCATION
Bengaluru, India

ROLE
UX Designer

TOOLS
Figma

CONTEXT

What kind of data centers does the military use? How do data centers work? If you've ever had such questions, this case study sheds light into the intricate world of large scale data and storage.

Nutanix provides the Prism OS, an operating system designed for large privately owned data centers, so they perform as seamlessly as the public cloud.

In a statistic published by Cloudzero, **over 80% of organizations use a mix of private and public cloud**, for business resiliency, efficiency and its cost effectiveness.

OUTCOME

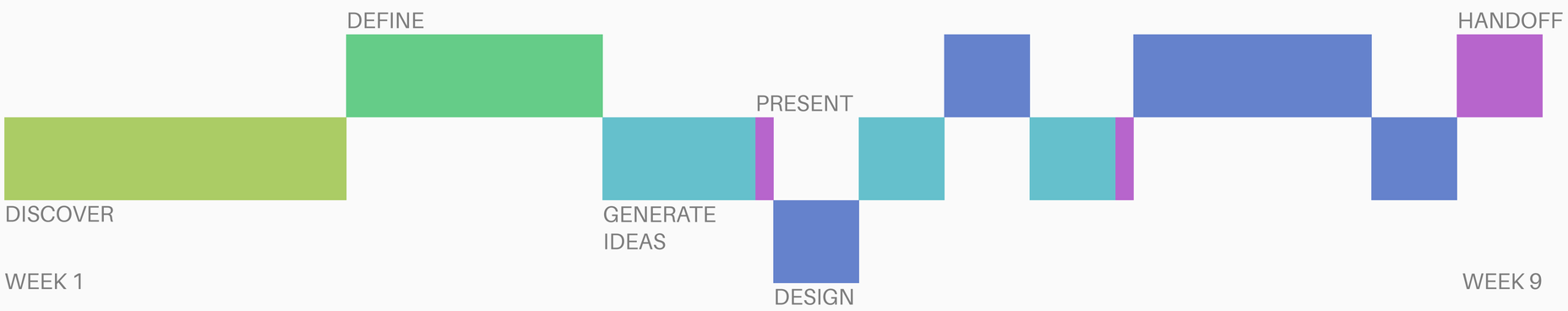
A BALANCED AND SIMPLE EXPERIENCE FOR BUSINESSES TO ACCESS THEIR CLOUD AND PRIVATE STORAGE VIA A SINGLE SHARED URL. ENHANCING NUTANIX'S HYBRID MULTI CLOUD STRATEGY.

I LIKE THE WAY HE WORKS. HE UNDERSTOOD THE REQUIREMENTS AND ASKED LOT OF QUESTIONS FOR BETTER UNDERSTANDING.

Shivam takes feedbacks positively and tries to think from different perspectives. He learned how S3 works in short time. and came up with flow and mockups. His need to give better attitude is great.

Testimonial / Feedback

TIMELINE



IF FEDERATION SUPPORTS HYBRID MULTI CLOUD, THE UNDERLYING STORAGE INFRASTRUCTURE BECOMES IRRELEVANT AS LONG AS A BUCKET WITH THE RIGHT NAME EXISTS.

INTERVIEWS CONDUCTED

STAKEHOLDERS
Front End Lead
Development Lead
Product Manager

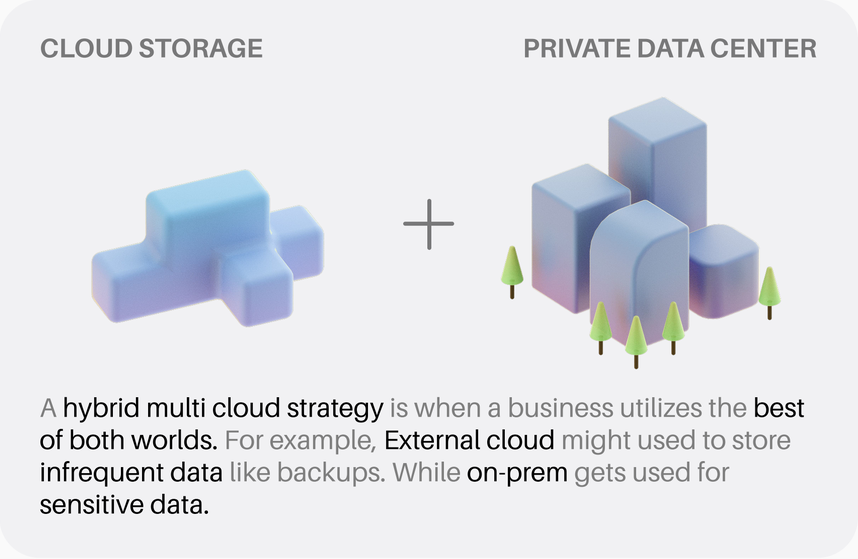
INDIRECT STAKEHOLDER
Marketing Lead

A frequent back and forth with the key stakeholders helped me build rapport, understand the perspective of each stakeholder, as well as the need for the feature.

OBJECTS STORAGE

In data centers, unorganized data like videos and images are stored in so called **data lakes.** These data lakes implement the **Objects Storage System**, that treats each item as an **'object'**, there exists an **'objects manager'**;

that puts and retrieves these objects into and from **'buckets'**. Think of it like a valet service, you only have to remember your car, and the parking is handled by the valet.



A **hybrid multi cloud strategy** is when a business utilizes the **best of both worlds.** For example, **External cloud** might used to store **infrequent data** like backups. While **on-prem** gets used for **sensitive data.**

WHAT IS HYBRID MULTI CLOUD?

THE OBJECTS STORAGE SYSTEM

BUCKETS

Buckets are logical division of the Object Stores. Role Based Access Control is performed at a bucket level.

PROBLEM OF OBJECT STORES

At scale, a single application might have to ping multiple different objects stores to store different data in different buckets.

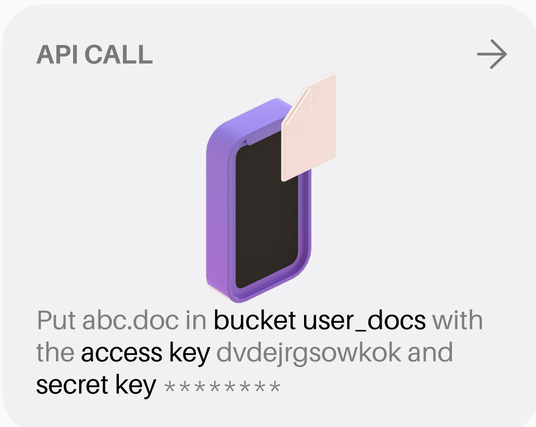
THE SOLUTION OF FEDERATION

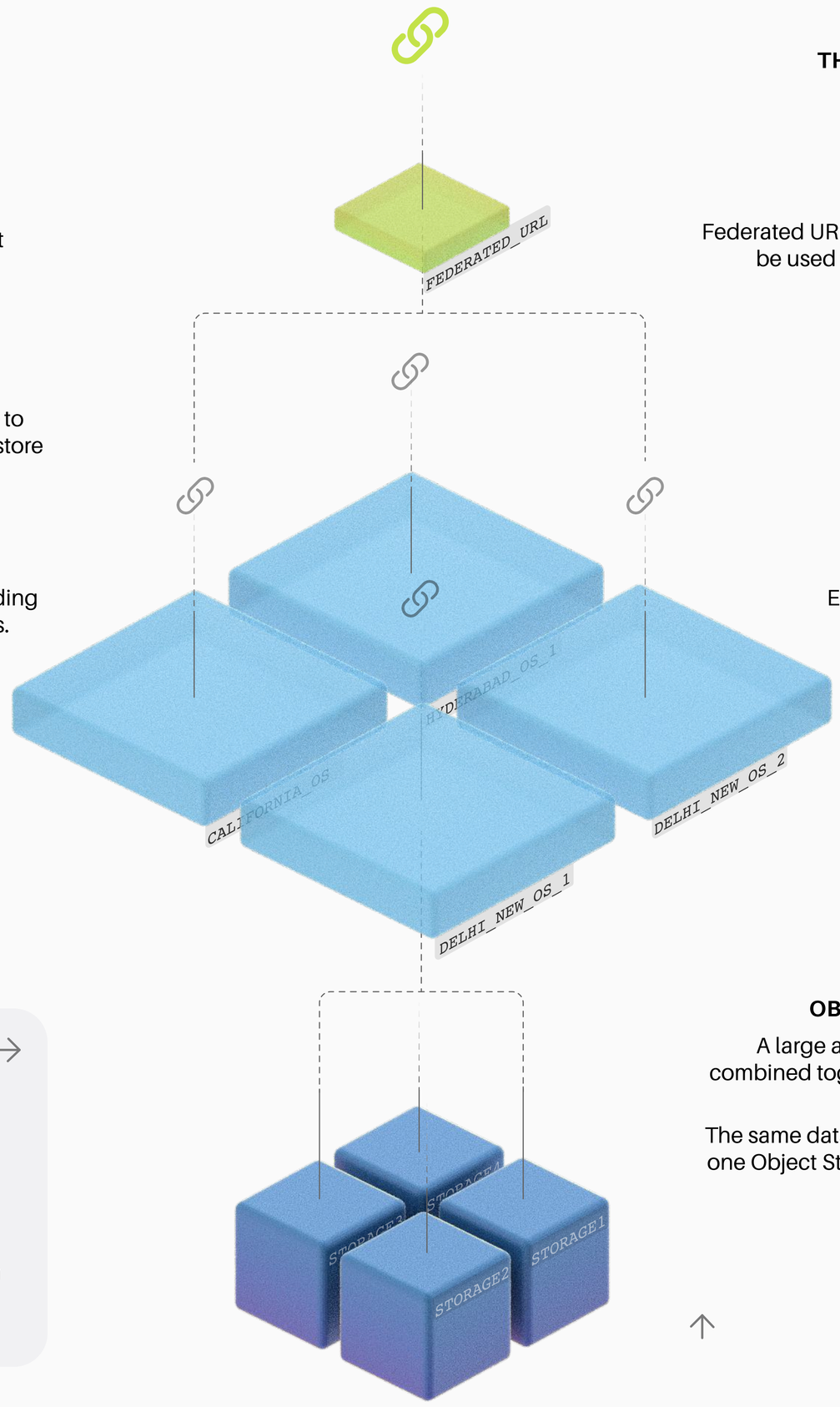
Federation solves this problem by providing a single URL for its member object stores.

LIMITATION OF FEDERATION

Federation in its existing state was not made for hybrid cloud, supporting only Nutanix managed hardware.

FEDERATION IN ACTION





THE URL INFRASTRUCTURE

FEATURE OF
Nutanix managed on prem storage

FEDERATED URLS

Federated URL is a common URL than can be used to access buckets in all of its member objects stores.

OBJECT STORE URLS

Each Object Store has its own URLs to access it.

FEDERATED ULRS PER ORG.
1-2 Federations

OBJECT STORE FORMATION

A large amount of physical storage is combined together to form Object Stores.

The same data center can have more than one Object Stores as per its configuration.

OBJECT STORE SIZE
Generally Petabytes in size.

BUCKETS PER OBJECT STORE
Generally 5-10, upto 100.

MY ROLE WAS TO EXTEND THE FEATURE OF FEDERATED URLS TO SUPPORT AND INTEGRATE EXTERNAL CLOUD STORAGE.

AN INSIGHT INTO THE LIFE OF IT ADMINS.

The multiple stakeholder analysis helped me identify three key user archetypes associated with the project.

The P.R.D. also helped define the scope of the project, as well as laid out the future plan of expansion. **My design had to ensure future plans could be built upon it.**

PC Admin

IT admins with access to admin section of Prism Central OS. Sets up Object Stores and manage physical infrastructure. Creates users and their permissions, access and roles.

Sub Admin

Managers that ensure smooth communication between PC admin and End user. Creates buckets in Objects Stores and shares with End user.

End User

Engineers working on applications. Ask the sub admin to create relevant buckets. Pings the federation with get/put requests.

NOTE

sometimes, end user & sub admin can be one person.

HOW THEY WORK

The end user is working on an application that needs a bucket in an Object Store. The Object Store is not a member of the Federation, so the sub admin requests the PC admin to add it to the Federation. Then, the sub admin creates the bucket and shares it to the end user .

THE BIGGEST CHALLENGE WE FACED WAS DECIDING ON OBJECT STORE EQUIVALENT FOR EXTERNAL STORAGE. EACH CLOUD PROVIDER HAS A DIFFERENT APPROACH TO STORAGE INFRASTRUCTURE.

MAPPING FLOWS
I mapped flows for each approach to see how it fits the current structure.

I came up with 6 different approaches to adding external storage, which I narrowed to 3 via discussions with my mentor.

Using the well developed design system of Nutanix, I was able to quickly create key screens for each of these 3 approaches to present to stakeholders.

NOTE
These buckets already exist in external cloud storage.

1 Add Buckets

PC admin adds external buckets to the Federation, shares to the end user.

Pros
- Admin would maintain control over all buckets added to the federation.

Cons
- Federation is a collection of objects stores, and not buckets. Adding external buckets directly is [illegible] incorrect.
- [illegible] access to their external buckets and sharing user privileges to the PC admin would risk security.

2 Add external storage locations

PC admin onboards external storage locations to the Federation, shares to sub admin, who then onboards there buckets to share to end user.

Pros
- Semantically correct to federation hierarchy.
- Generic and adaptive solution.
- Respects principle of least privilege.

Cons
- Time consuming to add locations [illegible] separately.

3 Add Accounts

PC admin onboards entire accounts to the Federation from external platform along with all of its buckets, shares to end user.

Pros
- High design intervention along with management of external storage through Nutanix.
- Easy and quick onboarding.

Cons
- Customers might be uncomfortable sharing admin level account details.
- Developmental challenges due to [illegible]
- Approach might be too specific and not cater to generic use cases.

Uh ho!

An NDA prevents me from further displaying this project.

To discuss this case study in detail and also view the final output, feel free to contact me on my email.