leostream®

Remote Desktop Access Platform

Getting Started with Leostream® Concepts

A Primer of the Leostream® Platform Components, Concepts, and Workflows

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Introduction

The Leostream® Remote Desktop Access Platform lies at the heart of any hosted desktop deployment, providing crucial remote access and desktop connection management for hybrid environments. For cloud environments, the Leostream Platform also provides advanced functionality for managing capacity, allowing you to expand and contract your cloud environment to meet the ever-changing demands of your organization.

Using the Leostream Platform, you provide end users with consistent, reliable access to desktops from a wide range of client devices and can host your resources in a wide range of on-premises or public cloud platforms. IT teams across all industries use the Leostream Platform to build flexible and secure hosted desktop environments today, that are future-proofed for tomorrow. This document provides information on the basic concepts and components that power the Leostream platform.

Leostream® Platform Components

The Leostream Connection Broker is the backbone of the Leostream platform, with the Leostream Gateway, Leostream Agent, and Leostream Connect client providing important supporting functionality. For more details on any of the Leostream components, visit the Leostream Documentation page.

- **Connection Broker**: The main application that manages the hosted desktop environment. The Connection Broker is the central management layer for configuring your deployment, including inventorying and provisioning desktops, assigning and connecting users to these desktops, and defining the end-user experience. The Connection Broker also includes a web portal for users to access their hosted resources.

- **Leostream Gateway:** An optional application that provides HTML5-based clientless remote access for users connecting to their remote desktop. The Leostream Gateway also provides gateway functionality for protocols such as RDP, HP ZCentral Remote Boost, Amazon DCV, and Mechdyne TGX, to connect users to desktops hosted in a network that is isolated from the user's client device.

- **Leostream Agent**: When installed on the remote desktop, the Leostream Agent provides the Connection Broker with insight into the connection status of remote users, including when they log out, disconnect, or are idle on their desktop. The Agent also manages enhancements such as USB device passthrough and network printer redirection. The Leostream Agent is available for Microsoft Windows, Linux and macOS operating systems. For more details, see the Leostream Agent Administrator's Guide.

- **Leostream Connect:** A software client provided with the Leostream Platform that allows users to log into your Leostream environment and access their hosted resources from fat or thin clients. Using Leostream Connect, you can repurpose existing desktops and laptops as client devices, lowering the cost of VDI deployments. Some thin clients provide built-in Leostream Connect clients. For more details, see the Leostream Connect Administrator's Guide.
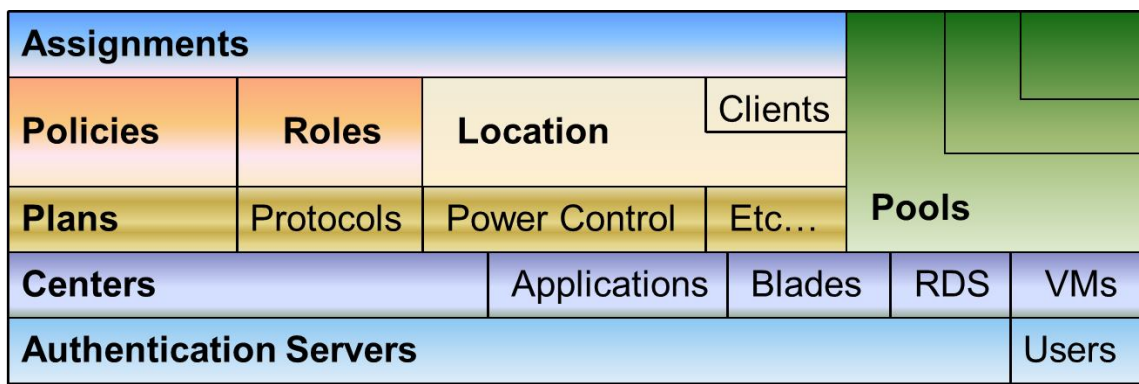
  In addition to using Leostream Connect, users can log into their Leostream environment using the

Leostream Web client, any PCoIP client device, or any number of compatible thin clients.

- **Database:** In a proof-of-concept environment, the Connection Broker stores all information in an internal PostgreSQL database. A large-scale, redundant production environment requires an external PostgreSQL, Azure SQL, or Microsoft® SQL Server® database.

Leostream® Platform Concepts

Before beginning to configure your Leostream environment, you should familiarize yourself with the core Leostream concepts. All Connection Broker configuration is done in the Administrator Web interface. There, you define the Leostream platform concepts shown in the following figure. Generally, begin by defining authentication servers, and fill in the other concepts as you work through your configuration.

The following table describes these concepts in more detail.

Leostream Concept	Definition
Authentication servers	A server that provides authentication services to users logging into the Connection Broker. The Connection Broker supports username/password authentication using Microsoft Active Directory® and OpenLDAP™, and can integrate with any Identify Provider that supports RADIUS or SAML protocols. You can specify any number of trusted or not-trusted domains, using any combination of authentication server types. In addition, the Connection Broker allows you to manually define local users without configuring an authentication server.
Centers	The external systems from which the Connection Broker inventories hosted resources, including desktops and printers. The Leostream Platform supports a wide range of both on-premises solution and cloud hosting providers.
Pools	Collections of desktops. A desktop's pool membership controls how the Connection Broker manages the end user's connection and remote session. Pools also define rules that determine when the Connection Broker creates new desktops in the cloud.
Plans	Common sets of rules that define how the Connection Broker manages the end user's connection to their assigned desktop, including protocol, power control, and release plans.

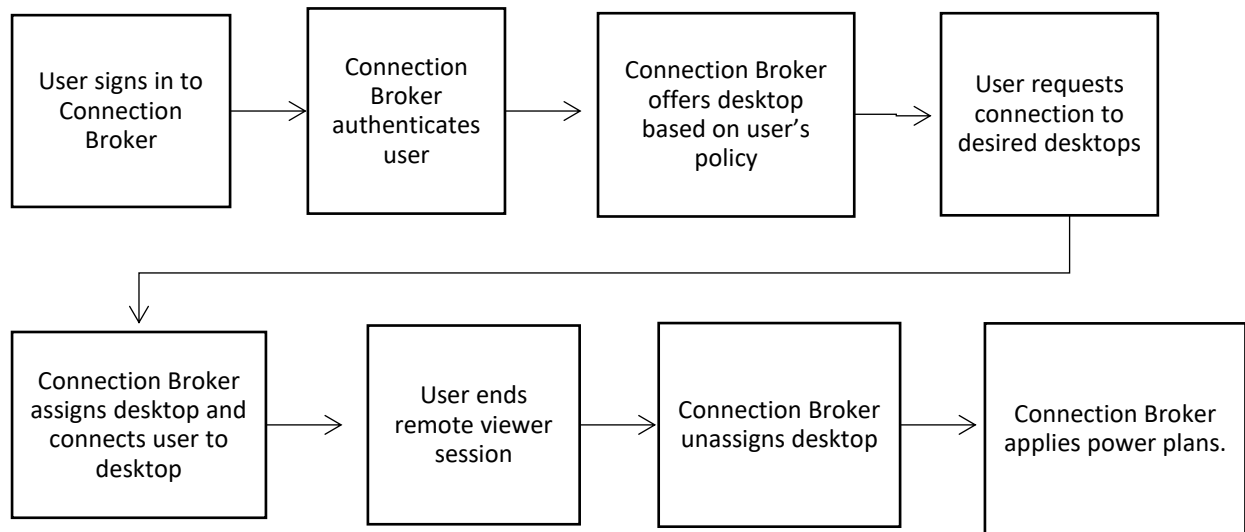| Leostream Concept	Definition
Policies	Rules that assign desktops from one or more pools and associate plans with the desktops in those pools. Policies also control USB device passthrough permissions. The Connection Broker assigns a single policy to the user.
Roles	Permissions that control the level of access users have to the Connection Broker Administrator Web interface.
Assignments	A set of rules that determine which role and policy the Connection Broker assigns to a user, based on who the user is and where they logged in.

The following figure depicts a high-level architecture of a hybrid-cloud hosted desktop environment managed by the Leostream Platform.

Conceptual: Workspaces instances run in an AWS Managed VPC with a ENI in the customer VPC
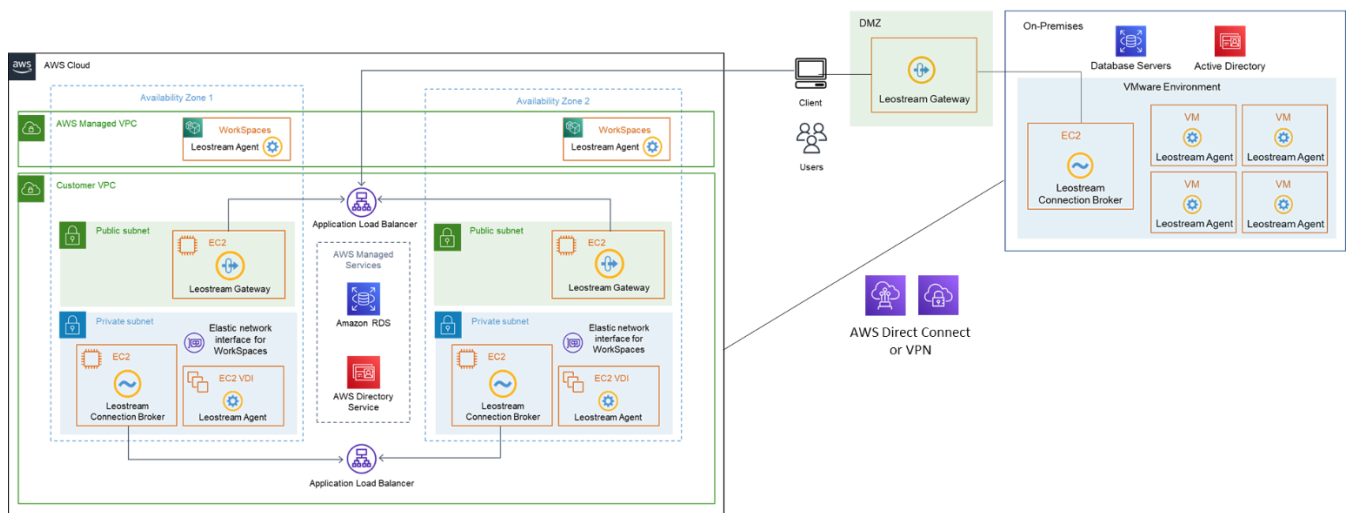
How the Leostream® Platform Manages Users

The following figure illustrates the typical steps involved in connecting users to desktops, which are described in more detail after the illustration. With the exception of authenticating users, policy logic determines how the Connection Broker handles each step.

```
┌──────────────┐     ┌──────────────┐     ┌──────────────┐     ┌──────────────┐
│ User signs in│     │  Connection  │     │  Connection  │     │ User requests│
│      to      │ ──> │    Broker    │ ──> │Broker offers │ ──> │ connection to│
│  Connection  │     │ authenticates│     │desktop based │     │desired desktop│
│    Broker    │     │     user     │     │ on user's    │     │              │
│              │     │              │     │   policy     │     │              │
└──────────────┘     └──────────────┘     └──────────────┘     └──────────────┘

┌──────────────┐     ┌──────────────┐     ┌──────────────┐     ┌──────────────┐
│  Connection  │     │              │     │              │     │              │
│Broker assigns│     │  User ends   │     │  Connection  │     │  Connection  │
│ desktop and  │ ──> │remote viewer │ ──> │    Broker    │ ──> │Broker applies│
│connects user │     │   session    │     │  unassigns   │     │ power plans. │
│  to desktop  │     │              │     │   desktop    │     │              │
└──────────────┘     └──────────────┘     └──────────────┘     └──────────────┘
```

1. **User signs into the Connection Broker:** End users log into the Connection Broker using a Web browser, thin client, mobile device, or Leostream Connect software client. Different client types support different types of credentials, such as username/password, smart cards, proximity cards, RSA tokens, or fingerprints.

2. **Connection Broker authenticates user:** After the Connection Broker receives the user's credentials from the client, it searches for the user in the domains defined in the Connection Broker.

3. **Connection Broker offers resources based on user's policy:** The Connection Broker assigns a policy to the user based on the assignment table associated with the domain chosen in step 2.

4. **User requests connection to desired desktop:** Users with policies that offer multiple desktops can choose which, and how many, desktops they want to connect to.

5. **Connection Broker assigns desktop and connects user:** After the user selects one or more desktops, the Connection Broker assigns those desktops to the user. After a desktop is assigned to a particular user, the Connection Broker will not offer that desktop to any other user.

    After the assignment is made, the Connection Broker launches the display protocol selected for that desktop. The Connection Broker is not in the data path of the display protocol connection. If the user's desktop is isolated in a different network, you can use the Leostream Gateway to tunnel the user's desktop connection.

6. **User ends remote viewer session:** When the user disconnects or logs out of their remote desktop, the Connection Broker applies any power control or release actions specified by the plans assigned to that desktop in the user's policy.

7. **Connection Broker unassigns desktop:** If the user's release plan releases the desktop back to its pool, the Connection Broker unassigns the desktop. Otherwise, the Connection Broker retains the desktop assignment. If the desktop is released to its pool, it becomes available for other users.

8. **Connection Broker applies power policy:** Lastly, the Connection Broker takes any power control actions set in the user's policy.

Where to go next?

Consult the following guides for more information on setting up your Leostream environment.

- Leostream Installation Guide – For instructions on installing all components in the Leostream Platform

- Connection Broker Quick Start Guide – For a general overview of how to configure pools, policies, and assignments in the Connection Broker

- Leostream Gateway Guide – For information on installing and using the Leostream Gateway

- Leostream Scalability Guide – For guidelines on creating a large-scale production environment

- Connection Broker Administrator's Guide – For a complete description of all Connection Broker functionality