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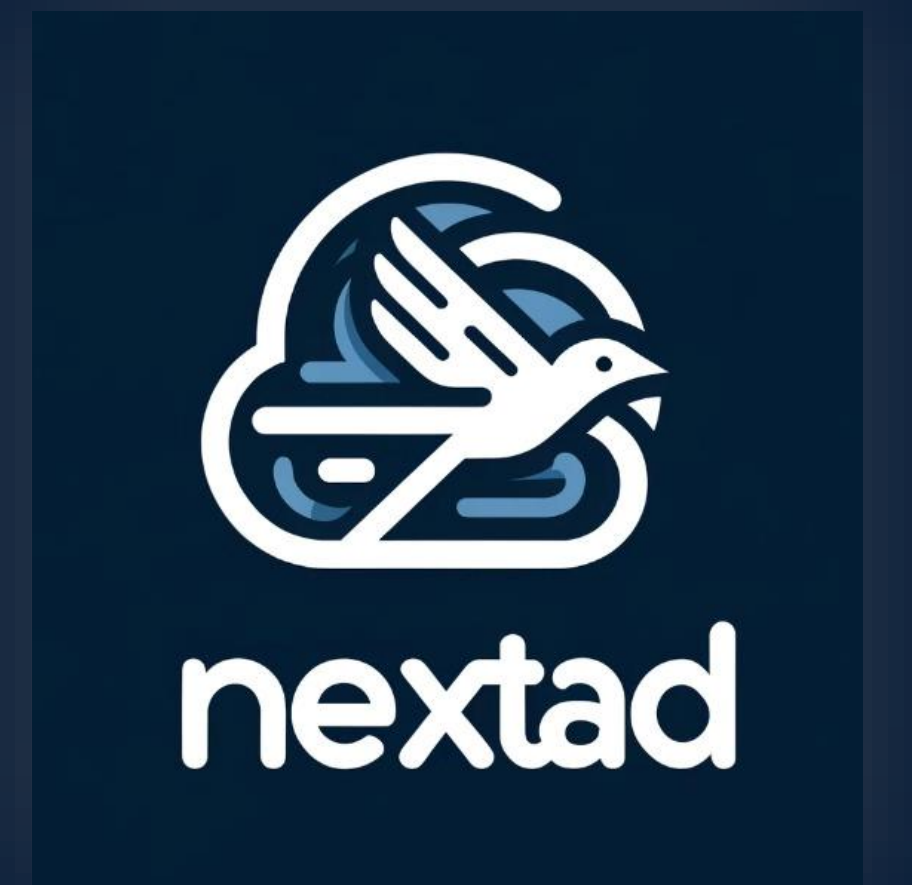
FIU Knight Foundation School of Computing and Information Sciences

Fall 2023 Senior Design Project

NextAD: Profile Management Integration App

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PROBLEM & SUMMARY

The aim of designing this NextCloud application was to establish a seamless link that allows users or administrators to conveniently modify their own or others' attributes within an Active Directory from any location, provided they are using NextCloud.

REQUIREMENTS

The current version of NextAD utilizes the following:

- NextCloud Version 27.1.1 or newer
- NextCloud LDAP/AD Integration
- Active Directory Service (used Windows Servers 2019 running Active Directory Domain Services)

See also:

- Virtual Machine (used Oracle VirtualBox VM for LDAP Server)
- Deployment and Hosting Application (used Docker)
- Development Environment: Microsoft VS Code, GitHub, PHP, MariaDB, JS, CSS, and HTML were used.

VERIFICATION

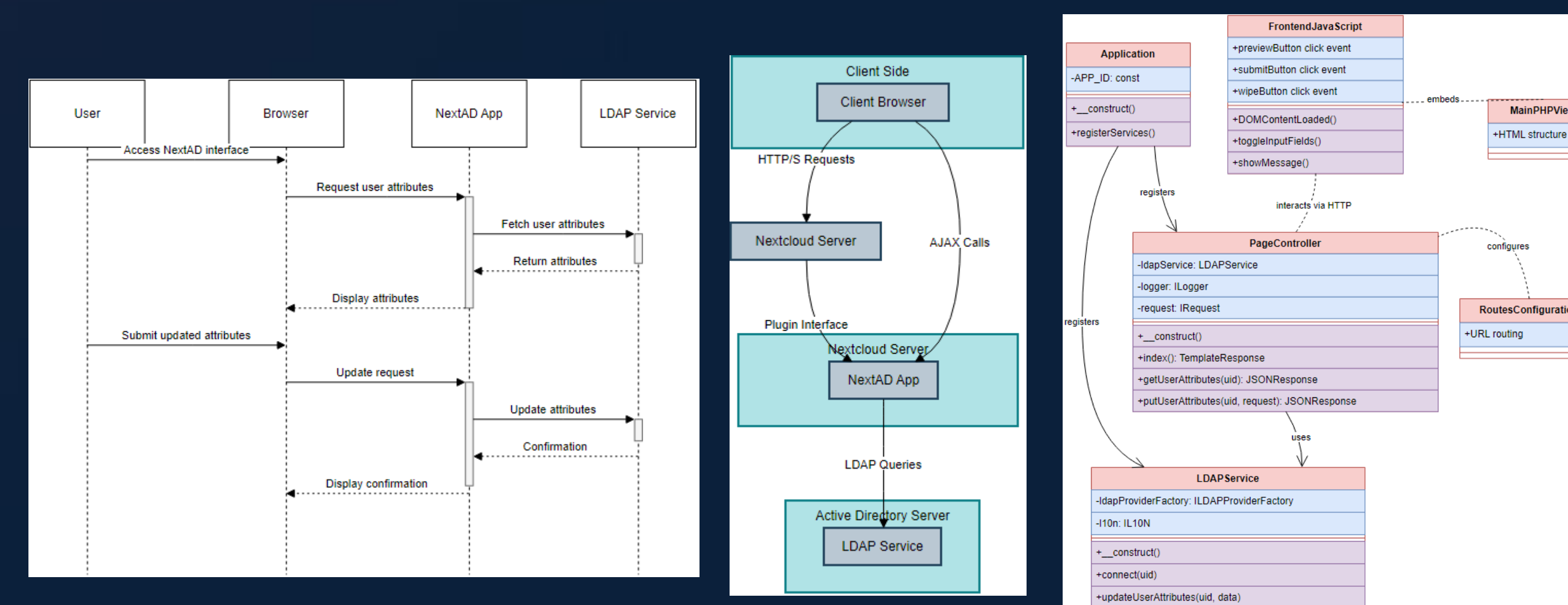
Active Directory verification for each user was achieved through NextCloud's LDAP administration settings. Passing the client and base DN in the LDAP settings, we were able to establish a connection with the Active Directory server and execute LDAP queries for NextCloud to recognize each user. This allows users to log in using their Active Directory credentials through NextCloud to use the NextAD app. It is essential for NextCloud to recognize the AD client as NextAD fetches their user ID once they start using the app (See Figure 1.1-4). Once LDAP/AD Integration settings are configured in the administration settings, users within the active directory are able to use their unique IDs to sign in to NextCloud. See Figure 3 for the user profile management page of NextAD. Here, current user attributes can be once again verified by the edit attributes button, which displays these aforementioned attributes.

CURRENT SYSTEM

The current version of NextAD features the following:

- Modifying Active Directory attributes at the press of a button
- Previewing user attributes from the Active Directory
- Wiping all user attributes from fields before confirmation in the Active Directory
- Automatic Active Directory user recognition by User ID (UID) of logged-in account

SYSTEM & OBJECT DESIGN



CONTRIBUTION

- Utilized net-centric skills to diagnose and fix connection errors between LDAP/AD Integration and NextCloud through subnetting IP addresses (See Figure 4)
- Guided members in the full installation, configuring and execution of Oracle VM VirtualBox and Windows Server (see Figure 2)
- Demonstrated to members the connection between the LDAP Server and various Server, Users, Login Attributes, and Groups sections of the LDAP/AD Integration (See Figure 1.1-4)
- Contributed to the backend connection functionality which utilized built-in NextCloud classes as well as user-generated PHP routes for AD user attributes
- Assisted a team member in debugging issues with passing correct user keys for the user attribute editor in AD (See Figure 5)
- Routinely organized daily meetings with other members as well as provided information in regard to App development documentation of NextCloud and LDAP/AD Integration documentation

IMPLEMENTATION



SCREENSHOTS

Figure 1.1

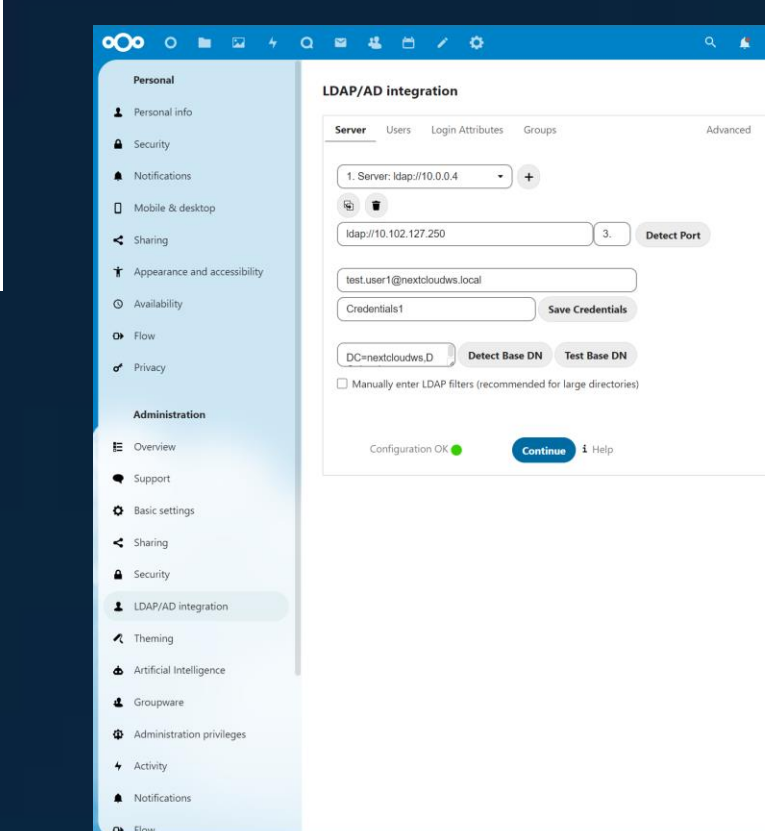


Figure 1.2

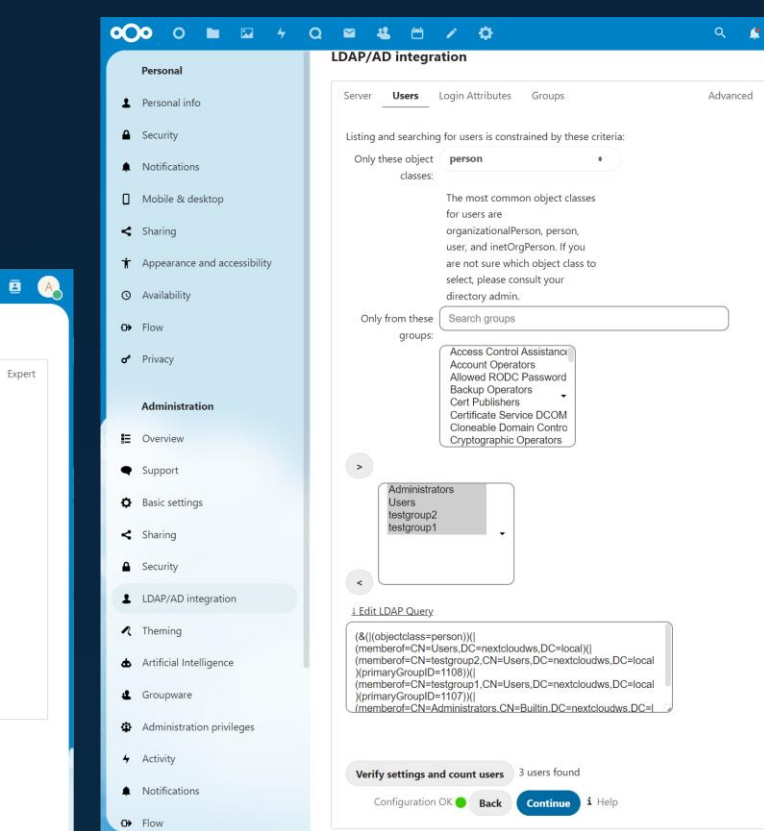


Figure 1.3

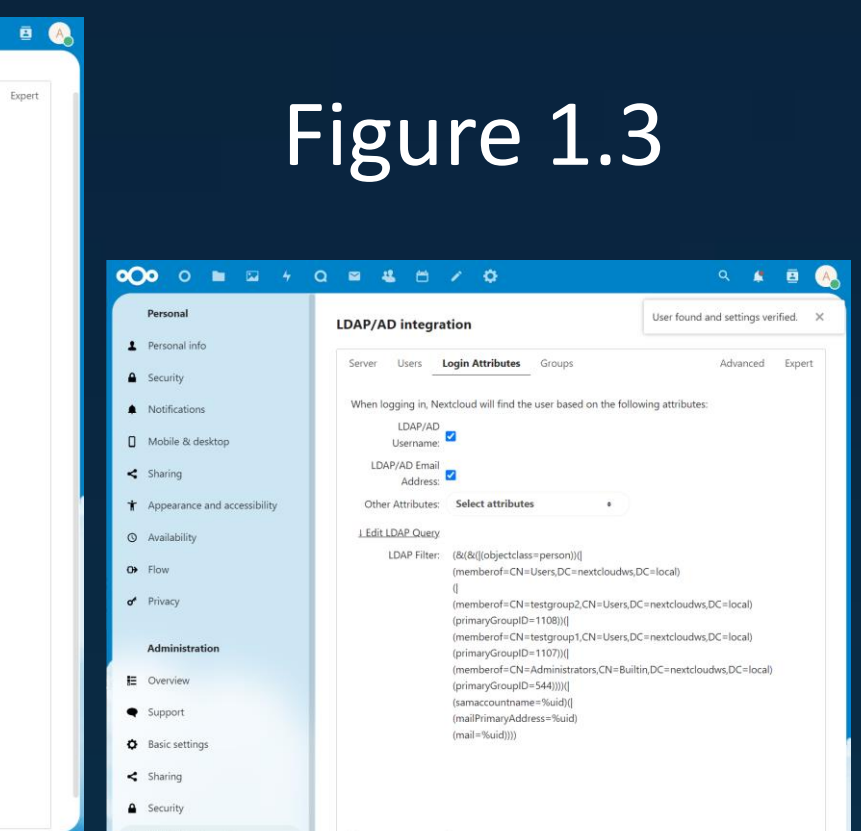


Figure 1.4

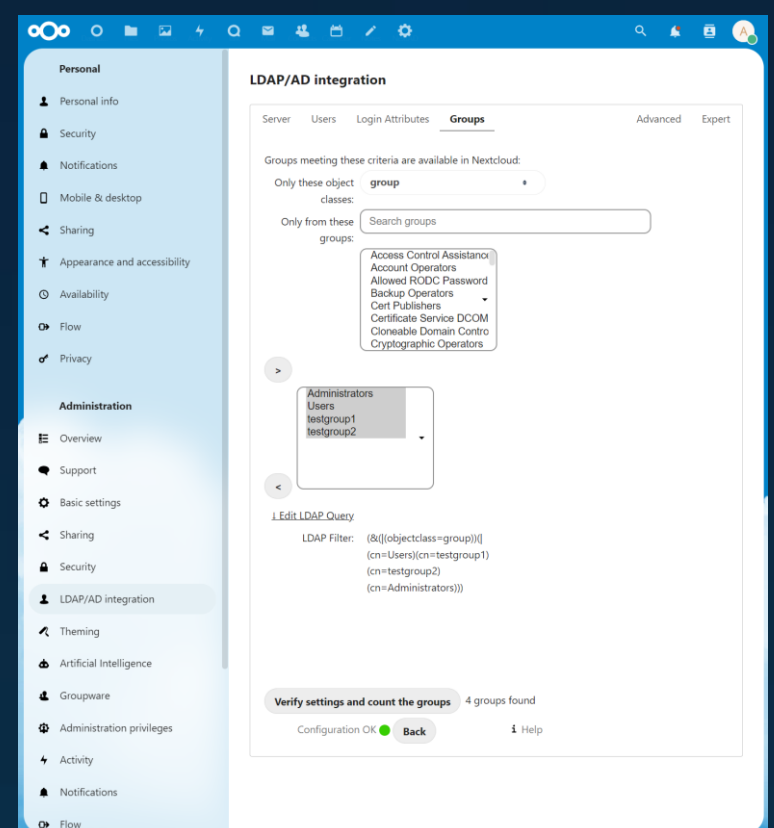


Figure 2

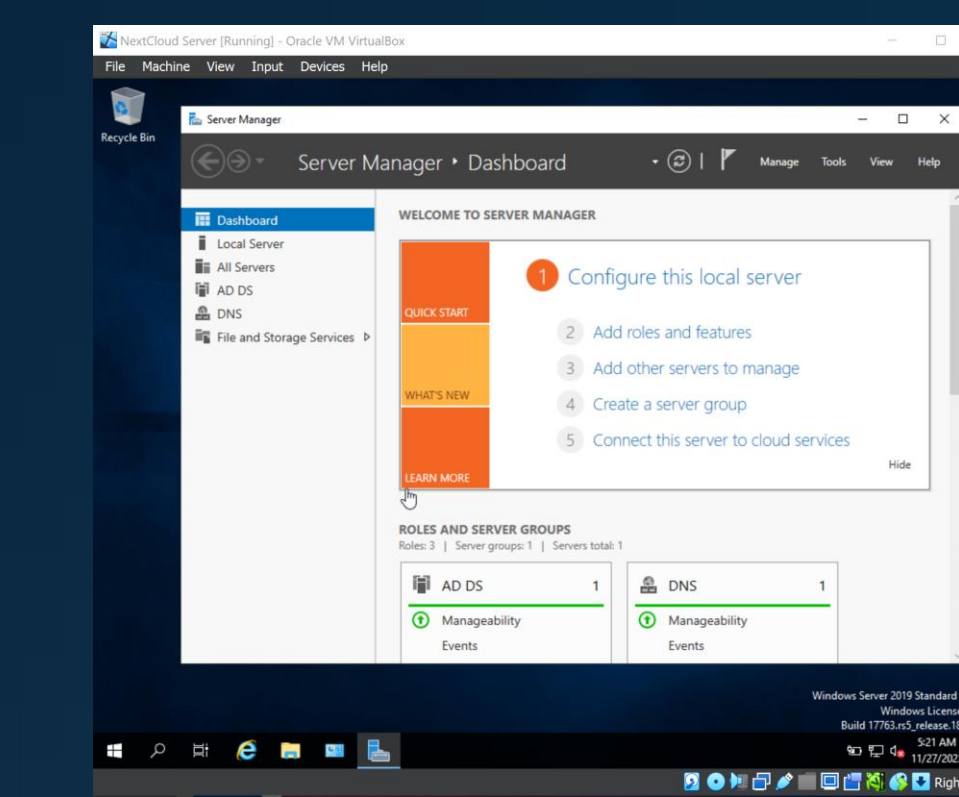


Figure 4

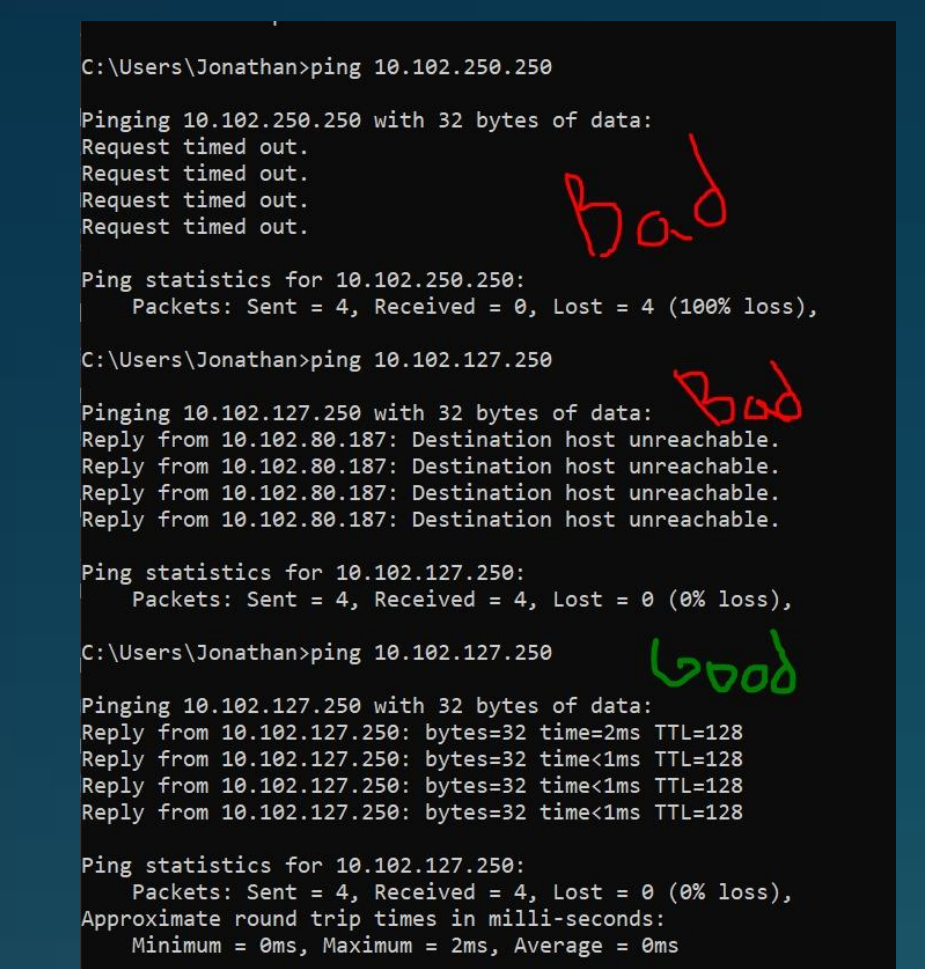


Figure 5

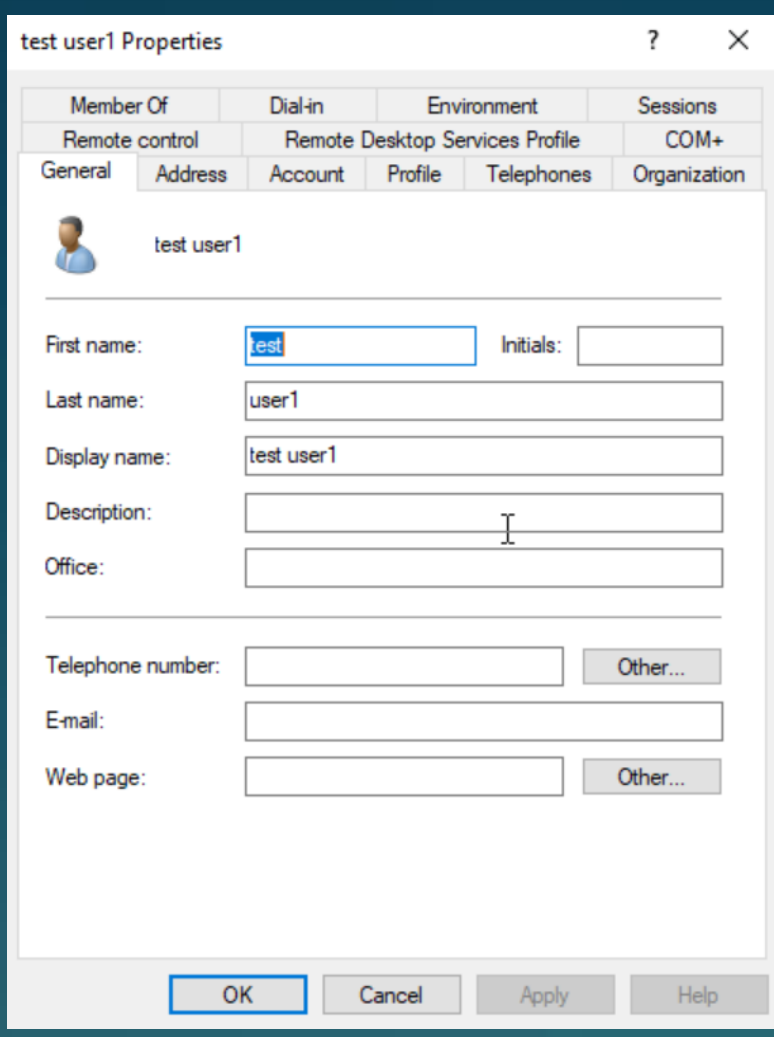
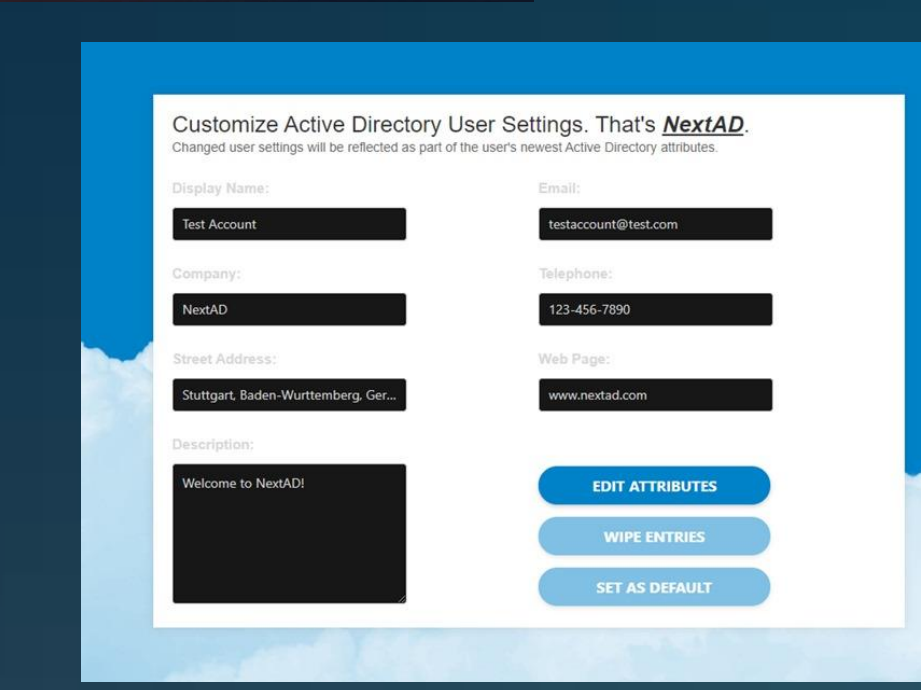


Figure 3



ACKNOWLEDGEMENT

The material presented in this poster is based upon the work supported by XXXXX (name of the project sponsor: federal, state or local government, or corporate partners, where applicable). We/I thank XXXX for his/her/their assistance and mentorship that I/we received throughout the senior design project.