

# VYSOKÉ UČENÍ TECHNICKÉ V BRNĚ

BRNO UNIVERSITY OF TECHNOLOGY

FAKULTA INFORMAČNÍCH TECHNOLOGIÍ  
ÚSTAV INTELIGENTNÍCH SYSTÉMŮ

FACULTY OF INFORMATION TECHNOLOGY  
DEPARTMENT OF INTELLIGENT SYSTEMS

## GENERAL NOTIFICATION SYSTEM FOR FREEIPA

SEMESTRÁLNÍ PROJEKT

TERM PROJECT

AUTOR PRÁCE

AUTHOR

Bc. PETR KUBÁT

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# **OBECNÝ NOTIFIKAČNÍ SYSTÉM PRO PROJEKT FREEIPA**

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BRNO 2015

## **Abstrakt**

Výtah (abstrakt) práce v českém jazyce.

## **Abstract**

Výtah (abstrakt) práce v anglickém jazyce.

## **Klíčová slova**

LDAP, Active Directory, FreeIPA, Kerberos, DNS, Dogtag

## **Keywords**

LDAP, Active Directory, FreeIPA, Kerberos, DNS, Dogtag

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# General Notification System for FreeIPA

## Prohlášení

Prohlašuji, že jsem tuto diplomovou práci vypracoval samostatně pod vedením pana Mgr. Adama Rogalewicze, Ph.D.

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Petr Kubát  
December 20, 2015

## Poděkování

Rád bych poděkoval hlavně panu Petru Špačkovi za jeho trpělivost při odborném vedení práce.

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# Chapter 1

## FreeIPA

FreeIPA (where IPA stands for Identity, Policy and Audit) is an open-source security management solution sponsored by Red Hat aimed primarily at Linux and Unix machines[10].

The project itself combines a number of various existing open-source technologies to achieve the goal of providing centralized authentication and authorization, as well as storing important account information like users or group memberships. FreeIPA also aims to provide easy management and setup of a domain controller which would otherwise be very difficult by using the same components on your own.

In this chapter I will briefly introduce some of the components FreeIPA uses and describe the architecture of the resulting FreeIPA server solution.

### 1.1 Directory Server

FreeIPA's directory service is built using the 389 Directory Server[4] and is used to store various information of all of FreeIPA's components. It also plays a big role in authentication and authorization using Kerberos which will be presented in the next section.

The LDAP protocol[9] is used as a means of communication with the 389 DS and the data itself is stored in a Directory Information Tree (DIT) which is a tree-like data structure.

LDAP provides several operations to use with the server[9]:

- **add, delete, modify:** These operations add, remove and modify the data contained in the DIT.
- **search, compare:** The search and compare operations are used in querying the DIT for specific information.
- **bind, unbind, abandon:** These operations can be used to authenticate to the directory, terminating the connection or abandoning a previously sent request entirely, respectively.
- **extended operations:** New operations that are not a part of the original protocol.

**1.2 Kerberos**

**1.3 DNS**

**1.4 Dogtag**

**1.5 FreeIPA Architecture**

## **Chapter 2**

# **Active Directory**



## Chapter 3

# Analyze

## **Chapter 4**

## **Conclusion**

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