

**Basics of Information Technology**  
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# Basic information and infrastructure of VSB-TUO



# University Structure

## 1. University

- Statutory level
- Provision of operational services – catering, accommodation, **infrastructure, technology**, etc.

## 2. Faculty (FEI)

- Main organizational unit from the point of view of "classification"
- Providing of the study agenda (faculty level)

## 3. Department (Department of Informatics)

- The main organizational unit from the point of view of the "study" of a specific study programme
- Providing of study and agenda at the department

# Single sign-on - SSO

SSO (Single Sign-On) is a **sign-in method** that allows a user to log on to multiple services and applications in a single way, without having to re-enter credentials. It uses the principle of creating and sharing a "token" between applications.

Username: login/personal number [@vsb.cz]

- Only one password (identity)
  - Flexible approach
  - Garance of the identity
  - Higher security (MFA, less password entry)
  - Easy to manage
- 
- **MFA** (Multi-Factor Authentication)  
*know something, have something, are something*
  - **Identity Provider**  
- bank identity, OAuth, SAML, OpenID, ...
  - **LDAP** (Lightweight Directory Access Protocol)  
- identity storage / information of users

VŠB TECHNICKÁ  
UNIVERZITA  
OSTRAVA

→ Enter your personal number and password

About the room number\*

Personal identification number is mandatory.

Password :\*

→ LOGIN

[Forgot your password?](#)

For security reasons, [log out](#) and close all browser windows after you finish working!

You are logging into the Single Sign On (SSO) system . The system allows you to access multiple secure applications (e.g. portal, EPS) after a single login using the same web browser instance.

Use the name and password from LDAP as your personal number and password . That is, the one you use to log in to read your mail.

<https://uzivatel.vsb.cz>

The screenshot shows the InNET User account interface. On the left is a dark sidebar with icons and labels: Dashboard, User account (selected), Study, Documents, Services, and Contacts. The main area has a light gray background. At the top is a search bar with a magnifying glass icon and the placeholder "Search". Below it, the breadcrumb navigation shows a house icon followed by "/ User account". The main title "User account" is displayed in bold black font. The page is divided into several sections, each with a title and a brief description:

- CHANGE PASSWORD**: Change of unified user password.
- CHANGE WIFI PASSWORD**: Change of password for connecting to Eduroam WiFi network.
- PERSONAL SETTINGS**: Setting of contact e-mail, phone, preferred language etc. (with a small edit icon icon).
- EDIT PROFILE**: Editing information on an employee's profile in the phone book.
- INNET SETTINGS**: Setting preferences to be displayed on InNET.
- LDAP ACCOUNT**: Information about your login account, password expiration.
- CARD**: Information about your card, the possibility of blocking a card in case of theft or loss.
- REGISTERED DEVICES**: Overview of devices for which you are listed as a responsible person.
- ELECTRONIC BUSINESS CARD**: Editing information generated on electronic business card with vCard.
- EMPLOYEE EVALUATION**: The system for setting up personal development and employee evaluation is used to set goals and tasks for personal development and to evaluate employees after the evaluation period.
- NEED HELP**: Login problems, FAQ, Helpdesk, technical contacts.

# <https://innet.vsb.cz>

Main guidepost for Internal Information and Services

- News & Updates
- Documents, directives, formal information
- IDOC – documentation and instructions
- IDESK/HELPDESK – direct support, infrastructure requirements, etc.
- POŠTA – access to the e-mail web interface
- STRAVOVÁNÍ (canteen)
- LMS, E-LEARNING
- EDISON, SCHEDULE
- PHONE BOOK
- atd.

# Electronic mail

<https://idoc.vsb.cz/xwiki/bin/view/uzivatel/email/>

Email address: **firstname.lastname.st@vsb.cz** (or similar), **login@vsb.cz**

## Classic mail server

- Web interface(Roundcube) – posta.vsb.cz
- POP3/IMAP/SMTP
- It is the student's responsibility to monitor their mailbox – the ability to set up redirection (uzivatel.vsb.cz)

## MS Exchange/Office365

- Mailbox move request only
- Complex environment based on cloud technology

### SMTP

- protocol for sending mail
- may/may not require authentication
- secure variant

### POP3

- protokol for mailbox access
- downloads mail to a local client
- secure variant

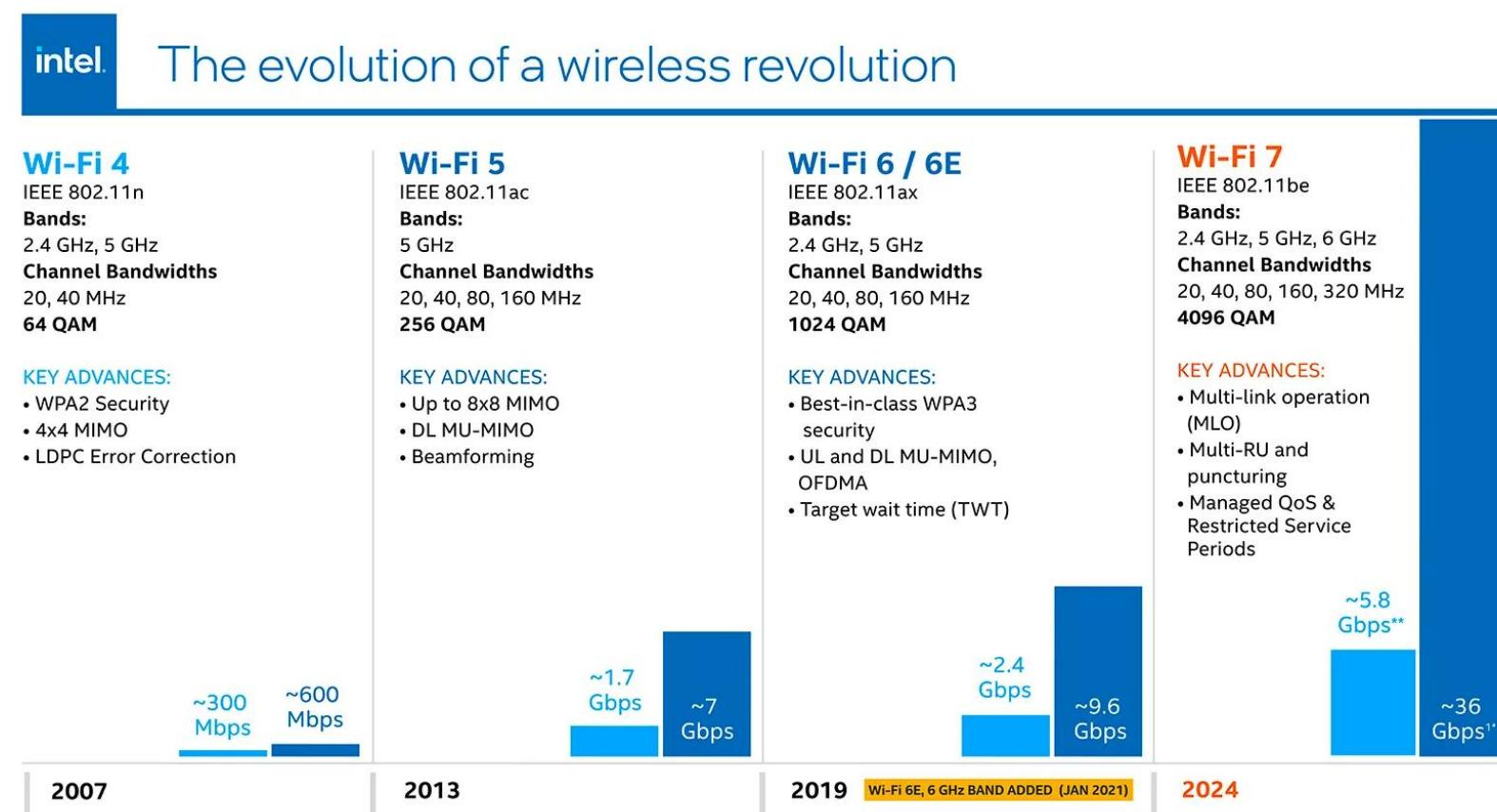
### IMAP

- protokol for remote access to the mailbox
- mail stays in the mailbox on the server sync folders, read, etc.
- secure variant

# Wi-Fi

Technology for **wireless connection to a computer network** (subsequently the Internet). It uses radio waves at frequencies of 2.4 GHz, 5 GHz and 6 GHz.

Various versions (since 1999, 11 Mbps) defining the technologies, speed, security, etc.



<sup>1</sup> Includes PHY and multi-link data rate improvements

<sup>\*\*</sup> Theoretical maximum data rates based on the latest draft of the IEEE 802.11be standard.

<sup>\*\*</sup> >5 Gbps Wi-Fi 7 2x2 client speed - is based on the current draft of the 802.11be specification which specifies the theoretical maximum data rate for a 2x2 device that supports 320 MHz channels, 4096 QAM, and Multi-Link Operation is 5.76 Gbps. Based on an industry-standard assumption of 90% efficiency for new Wi-Fi products operating in the exclusive 6 GHz band, the resulting estimated maximum over the air 2x2 client speed would be 5.19 Gbps.

# Wi-Fi

<https://idoc.vsb.cz/xwiki/bin/view/tuonet/wifi/>

## EDUROAM (Education Roaming)

An international network service that allows students, academics, and staff of universities and research institutions to securely connect to Wi-Fi at **their home school as well as when visiting partner institutions** around the world.

- Logging in to the "eduroam" network with your university credentials (login@vsb.cz, **WifiPass**)
- Authenticate via identity at your home university
- Need for a properly configured profile (automatic configurator, manual)

## TUONET-Simple, TUONET-IoT, ...

Additional university Wi-Fi networks with a specific operating model.

- TUONET-Simple – no authentication and encryption mechanisms, login via a web browser (every 20 minutes)
- TUONET-IoT – specific Wi-Fi network for Internet of Things devices, limited connection parameters, the need to request for each device

# VPN

**Virtual Private Network** is an application or service that encrypts the connection between an end device and the Internet and routes data sent and received through the Secure VPN tunnel.

VPN offers:

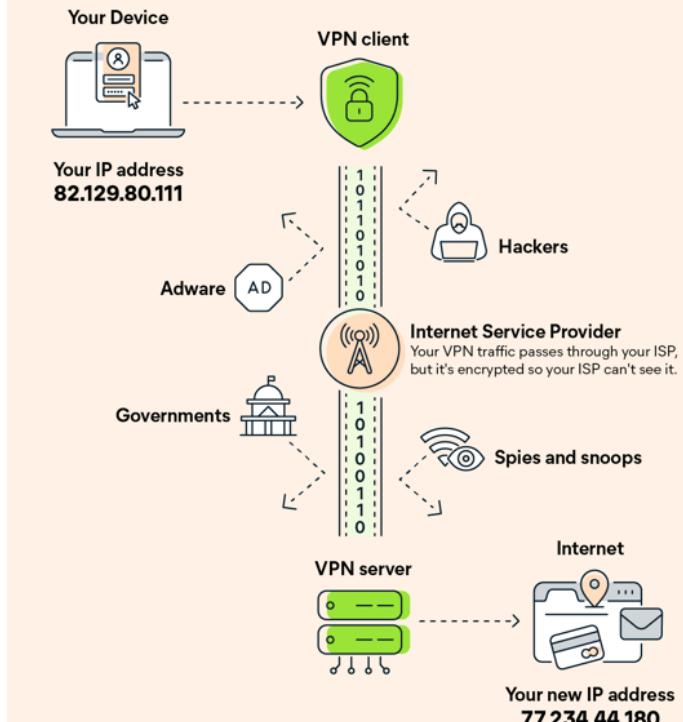
- Encrypt all data that is passed between endpoints
- Hide/Change IP Address
- Bypass censorship and tracking
- Allow access to blocked websites and services
- Allow access to geo-blocked content
- Affect positioning services on devices
- Ensures security on public Wi-Fi networks

Familiar services: NordVPN, ExpressVPN, Surfshark, Norton VPN

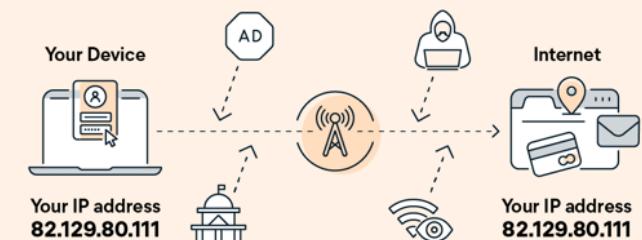
It requires a client application or is integrated into the operating system.

# How Do VPNs Work?

## When you use a VPN



## When you don't use a VPN



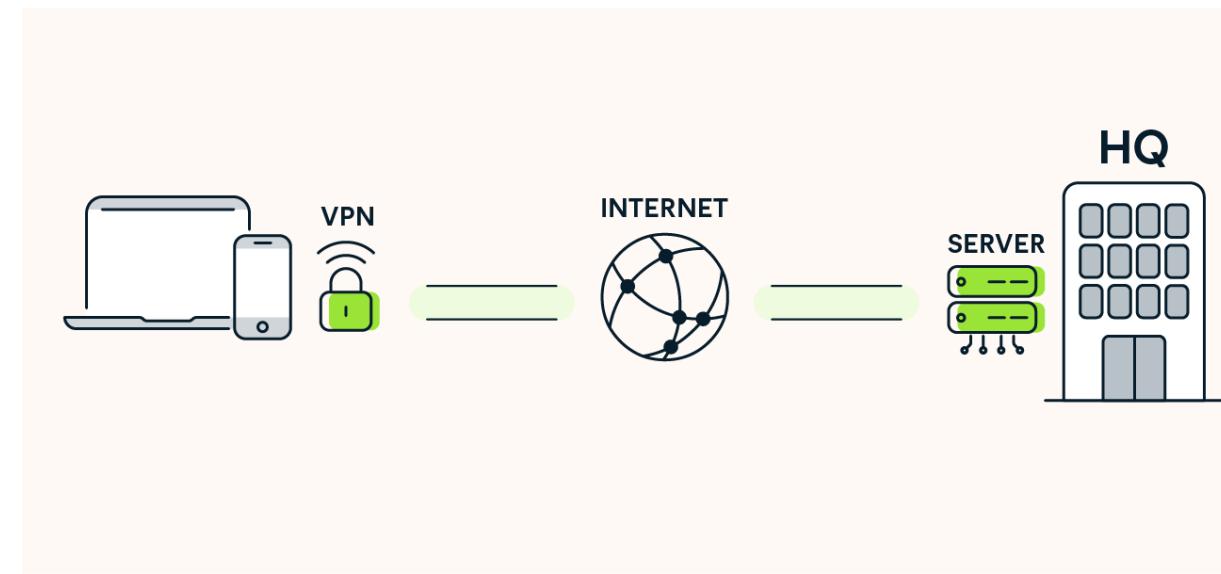
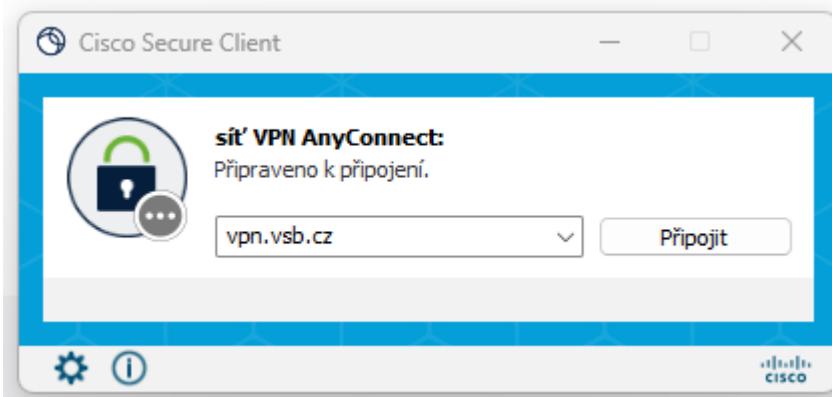
# VPN

<https://idoc.vsb.cz/xwiki/bin/view/tuonet/vpn/>

**Remote access** VPN usage. The connected device becomes part of the infrastructure to which it connects via the Internet.

The computer becomes part of the university network, including the change of the IP address (158.196.x.x) regardless of the provider, place of Internet connection, etc.

Requires installation and configuration of the **Cisco Secure Client** (vpn.vsb.cz). Login with login and LDAP password.



## Microsoft 365

<https://idoc.vsb.cz/xwiki/bin/view/uzivatel/email/office365-mail/>

The ability to use Microsoft 365 cloud services, including Office desktop applications. **The license is granted strictly for the duration of the study.**

You can sign in to the Microsoft 365 cloud (administration, installation) at <https://m365.cloud.microsoft/apps> (login@vsb.cz and LDAP password)

To use e-mail within M365 (Exchange), you must request a transfer via idesk.vsb.cz.

## MS Teams

- A comprehensive tool for communication, data access, sharing, etc.
- Web (<https://teams.microsoft.com>) or desktop/mobileapp (login@vsb.cz and LDAP password)
- <https://idoc.vsb.cz/xwiki/bin/view/uzivatel/prace-v-it-v-prostredi-mimo-univerzitu/ms-teams/>

## Google Workspace

<https://idoc.vsb.cz/xwiki/bin/view/uzivatel/cloud/google-apps/>

The ability to use Google Workspace Education cloud services - **strictly for the duration of your studies.**

You can sign in to Google Workspace services using standard Google Account methods.

A Google account is automatically set up, where the login name is a **school email address with the @g.vsb.cz domain**, the password is specific (**does not match LDAP**).

You can find the login and initial password in the uzivatel.vsb.cz (LDAP account).

# Microsoft Azure

As a student, you have the option to activate a student Azure account (for learning purposes).

Registration and login at **portal.azure.com** (login@vsb.cz and LDAP password)

- Requires MFA (Multi-Factor Authentication) activation
- Requires status verification for Azure for Students

What it enables and offers

- Access to Microsoft SW (Windows 11 EDU, Visual Studio, etc.)
- Possibility to use FREE services within Azure
- Credit (\$89 for 1 year) for the use of paid services
- Access to learning materials and other resources

## Other university services and servers

Other services and servers are available within the university/faculty/department infrastructure. In addition, within specific courses, you will have access to other specific services and servers (DB, SAP, IBM, etc.)

- **homel.vsb.cz**  
Web server for custom pages and storage of public data (homel.vsb.cz/~abc123)  
<https://idoc.vsb.cz/xwiki/bin/view/servery/homel/>
- **gitlab.vsb.cz**  
university-wide web tool for project management (GIT repositories)  
<https://idoc.vsb.cz/xwiki/bin/view/servery/gitlab>
- **kelvin.cs.vsb.cz**  
Tools for submitting assignments and tests within various subjects

## Others outside university services

In relation to the university (affiliation to the university), there are a number of opportunities to obtain specific/advantageous access to various services.

The benefit is based on identity verification within the university (MS Azure), using ISIC, identification by IP address or **through SSO**.

- **Overleaf**  
web tool for creating documents in Latex  
<https://knihovna.vsb.cz/cs/podpora-sv/uzitecne-nastroje/overleaf/>
- **Citace PRO**  
Tools to support citation of publications  
<https://knihovna.vsb.cz/cs/podpora-sv/uzitecne-nastroje/citace/>

## Linux not only for UPR

The operating system is the basic software that controls the operation of the computer.

Its main tasks are: hardware management, file management, process management, user interface, communication between programs and hardware

Examples of operating systems: Windows, macOS, **Linux**, Android, iOS.

### What is Linux?

- Operating system based on the Linux kernel (kernel + GNU) (1991)
- There are variants of the so-called distribution: Debian, Ubuntu, Fedora, Raspberry Pi OS, etc.
- Open source – access to source codes and open-source community
- Package architecture
- Flexibility, adaptability, safety, performance, price, etc.

<https://www.youtube.com/watch?v=rrB13utjYV4>

# Linux not only for UPR

<https://mrlvsb.github.io/upr-skripta/prostredi/os/os.html>

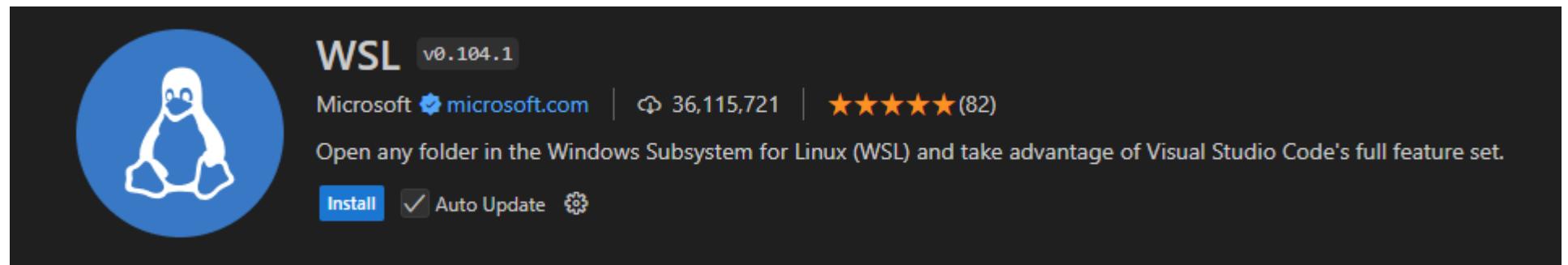
## How to install and use Linux

- As a standalone operating system – installation from "image" directly to hardware (multiboot) or "live image", macOS is technically built on similar foundations and principles
- Virtual machine – running inside the host system, so-called virtualization – e.g. VirtualBox
- Container – running inside the host container, so-called containerization – e.g. Docker
- **WSL (Windows Subsystem for Linux v.2)**
  - Ability to run Linux (Ubuntu) directly as part of Windows (program), without virtualization
  - Primarily for terminal level operation (but GUI is also possible)
  - Data/file sharing between Windows and Linux
  - Installation: `wsl` (`wsl --install`) on the command line (as administrator)
  - Start: app Ubuntu nebo `wsl` (it also allows you to manage distributions, etc.)
- To install packages for UPR: `$ sudo apt update`, `$ sudo apt install build-essential gdb`
- To install a file manager: `$ sudo apt install mc`

# Linux not only for UPR

## Visual Studio Code

- Multiplatform, free and widely used IDE (Integrated Development Environment)
- <https://code.visualstudio.com/>
- It supports various languages, development environments, workflows, extensions, etc.
- Efficient possibility of connecting VSCode (Windows application) with WSL environment (access to files and tools)



# Linux not only for UPR

