

INSTALLATION

We will present the use and key features of the MosaicOS operating system. Protecting our data and personal information is becoming more important every year, which is why the goal of MosaicOS is to keep our data much safer and protect it far more effectively while using various applications — with as few compromises as possible compared to today’s smartphone usage. The biggest difference compared to traditional phones lies in the installation and migration process, as more settings are required here due to data protection. However, everyday use is already very similar to that of familiar devices. MosaicOS is based on the GrapheneOS operating system, which runs exclusively on Google Pixel phones. Using the public code of GrapheneOS, the MosaicOS team has developed a user-friendly and secure operating system.

Before installation, it is important to back up all necessary data from your old phone. There are several ways to do this: on iOS devices, data can be saved to the built-in cloud service, while on Android devices this can be done via your Google account.

However, if you would like to do this in a slightly more secure way, without involving a third party, you can manually transfer all necessary data to a computer and then to the device running MosaicOS. Everyone values different types of data, but there is one thing all mobile phone users have in common: importing the contact list is essential when migrating. So here is a quick tip for that:

On Android, without involving a third party, contacts can be exported into a VCF file, allowing you to copy them to a computer. On your Android phone, open the Contacts application and look for the menu button (usually three dots or three lines in the top right or left corner), or the Sort option (this may vary depending on the Android version and manufacturer). Select the “Import/Export contacts” option, then choose export. The phone will create a contacts.vcf file containing all your contacts. Save the contacts.vcf file to “Internal storage” or to an “SD card.” After that, simply copy this file to your computer using a USB cable. We will return to this after installing MosaicOS.

On iOS devices, this process is slightly more complicated because there is no built-in option to directly export contacts into a .vcf file without using the cloud. However, if you install a contact management application, such as the free My Contacts Backup app or Backup My Contacts app, these allow you to export your contacts into .vcf format. By following the app’s instructions, you can create a contacts.vcf file containing all your contacts. Within the app, you can send this file to your own email address, from where you can easily download it to your computer — effectively bypassing cloud-based storage.

You practically do not even need to open this .vcf file on your computer; after installing MosaicOS, we will immediately copy it to the phone. But first, the installation:

Make sure the Pixel phone is powered off. During installation, you will need to use the three buttons on the side of the phone: the top power button and the two volume buttons below it. You will also need a properly functioning USB data cable and an internet connection.

Open mosaicos.io and click on the Installer. First, the system lists the Pixel models that are compatible with MosaicOS. Click Start. The installation method now is Clean install; the other option, Update, is used when upgrading from an earlier version of MosaicOS.

If you have been using a Pixel phone and are replacing the existing operating system with MosaicOS, make sure to back up all your data before installation because **EVERYTHING WILL**

BE ERASED!

If you have a brand-new Pixel phone, you do not need to worry about this.

So, choose Clean install. The system will then prompt you with a question: Re-locking the bootloader after installation is recommended, so check the box. The bootloader is responsible for loading the operating system and verifying the system startup process.

Check the box and click Next.

Before connecting the device, you need to start the phone normally with Android for a single setting. A brand-new device may be completely discharged. It is recommended to charge it to at least 60% before starting the installation process. I will now set the language to Hungarian and always click Skip, except for the internet connection — that will be necessary! The initial steps are not important for us; we only need one setting on the phone. Go to Settings, scroll down to About phone, then scroll to the bottom again. By tapping the Build number multiple times, you can enable Developer options. Tap it until the system says you are now a developer. Then go to Settings → System → Developer options → Enable OEM unlocking. Approve the pop-up window. After this, you can power off the phone.

This is where the MosaicOS installation begins:

Following the four steps displayed on the computer, start from the powered-off state, then press and hold the power button and the volume down button simultaneously until a red triangle with an exclamation mark appears. At this point, you are in Fastboot mode, which allows the installation of a new system. While in this mode, connect the device to the computer. Once the computer detects the device, click Connect, then select the recognized phone in the pop-up window. If the phone does not appear in the window, it is worth checking whether the appropriate device drivers are installed. A pop-up window on the computer interface will assist you if no recognizable phone is detected. You can then proceed to unlocking the bootloader. The system will once again warn you that all existing data on the Pixel phone will be erased. Using the volume up and down buttons, select Unlock bootloader, then on the computer click Unlock.

Select the BETA version and wait for the installation to complete. The phone will restart several times during this process.

After the download is complete, click Lock on the computer, then on the phone select Lock the bootloader.

If the installation is successful, the phone will restart automatically. Upon startup, a warning will always appear stating that the phone is not running the factory operating system; this can be ignored. Set the language, then a warning will appear stating that this is still a beta version — after the countdown finishes, you can proceed. Connect to Wi-Fi, then you may allow apps to use location data. This is not very significant, as you can later grant permissions individually to each application. You can then set a PIN code and fingerprint for unlocking the phone. I will skip this for the sake of speed, but we strongly recommend setting both, as this also enhances security. When setting up fingerprint recognition, make sure to place all sides of your finger on the sensor so that it can be recognized from multiple hand positions. Your fingerprint is stored in hardened form on MosaicOS and cannot leave the hardware-secured safe area of the device, which we refer to as the vault. When a request for fingerprint authentication comes from an application, the request goes into this vault, verification happens within the vault, and only the result is returned to the application. This provides additional reinforcement compared to traditional operating systems. We will skip restoring data for now. The system then recommends two applications: a keyboard and

a calendar. Both are secure and open source.

Next, the phone introduces some of its specific gestures: how to return to the home screen, how to go back, and how to open applications.

Then it asks whether to disable OEM unlocking. If OEM unlocking is disabled, in case of a serious software issue only an authorized service center can repair the device; if it remains enabled, it can be recovered using a computer or laptop. However, if OEM unlocking is enabled, anyone can unlock the bootloader using the methods shown earlier. While this does not allow your data to be stolen or read, it does allow it to be destroyed, since unlocking the bootloader wipes everything.

And we have arrived at the home screen.

After installation, your first task is to activate the SIM card. Insert the traditional SIM card into the designated slot on the side of the phone using a SIM tool while the phone is powered off. After entering your PIN code, the SIM card will activate. In the case of eSIM, you will need a QR code from your service provider. Once you have it, go to Settings → Network & Internet and enable eSIM support. You have two options for scanning the QR code: either through the quick tiles, or by using the phone's camera application, which has a QR code scanner function. Open the camera app and select the QR SCANNER option at the bottom. Scan the code received from your provider, and the eSIM will be activated.

After this, you can copy the .vcf file created from your Contacts to the phone. Once connected to the computer, copy the file into the Downloads folder, then tap it on the phone to import it. The saved contacts will automatically appear in your contact list.

Migration is clearly more complicated than moving to a standard Android or iOS device, as you must configure permissions for each individual application. While it may seem that we configure these permissions on traditional phones as well, this is only partially true: on the one hand, traditional operating systems can override these settings; on the other hand, MosaicOS offers far more configuration options.