



Firefox OS

v2.0

Product Feature Overview

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Overview of Firefox OS

The Firefox OS project enables the Open Web as a platform for mobile devices. It's built by the web, for the web, it supports the development of new Web standards and seeks to remove many of the rules and restrictions placed upon users by existing proprietary platforms. Firefox OS is built for developers, OEMs, operators, and, especially, end-users.

Developers can utilize existing standards such as HTML5 and new Mozilla-proposed standard APIs to create amazing experiences and apps. They'll no longer need to learn and develop against platform-specific native APIs.

OEMs and operators will be able to take ownership of the content and services they provide to their end users. Firefox OS enables the development of customized user experiences and managed app distribution allowing operators and OEMs to focus on retaining customer attention, loyalty, and relationships.

Consumers who use devices based on the Open Web platform will own their mobile experience. They'll manage how their information is accessed, and by whom.

Firefox OS contributors use many names to refer to the project. Boot to Gecko, B2G, and Firefox Mobile OS all refer to Firefox OS. This section of the document provides an overview of the foundational elements of Firefox OS including security, localization, minimum hardware requirements, and others. More information can always be found in the Firefox OS and Gaia wikis, found at <https://wiki.mozilla.org/FirefoxOS> and <https://wiki.mozilla.org/Gaia> respectively.

What's new in Firefox OS Version 2.0

Firefox OS version 2.0 adds many new features. The list below summarizes the key features added in this release. The Bugzilla IDs have been included if more details are required for a specific feature. While this list is not comprehensive of all the changes in this version it does list the major additions.

Functional Area	Feature (Bugzilla ID)
Compatibility and Standards	
UI	OS Visual Refresh (930561 [meta])
System Features	
First Run Experience	Add Edge Gestures to FTE tutorial (924624)
Gesture-based UI	Edge Gestures (918792 [meta])
Home Screen	Vertical Home Screen Enhancements (989848 [meta]) Improve Home Screen swipe (performance) (979396)
Lock Screen	Lock Screen Visual Refresh (950884)
NFC	NFC sharing of Image/video content (894320) NFC sharing (URL) (894678) Daemon modifications for supporting Tap-to-Pay (989889)
Wi-Fi	WPA EAP: To support PEAP and TTLS for EAP (922930) WiSPr Support needed to enable roaming between wireless internet service providers (982384)
Bluetooth	No pairing device message when lock screen turn on (859168)
WebRTC	Firefox OS Loop Client (988276 [meta]) Platform support: Get WebRTC platform ready for launching a user-facing service (970426) Adding H264 hardware support to WebRTC in Firefox OS (984239 [meta])
RTSP	Cross-protocol redirects from HTTP to RTSP (940460) Support basic RTSP streaming function (929372)

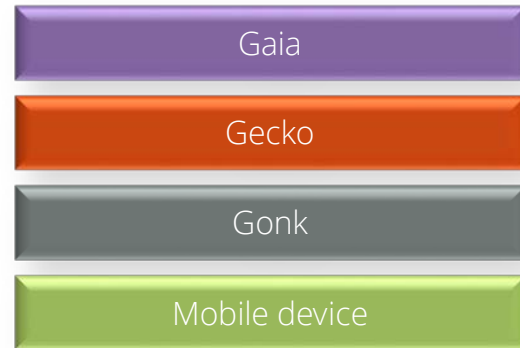
Functional Area	Feature (Bugzilla ID)
Core Applications	
Phone (Dialer)	Dialer Visual Refresh (950760 [meta]) Dialing from call log (920011)
Contacts	Contacts Visual Refresh (950765 [meta])
Messaging	Messaging Visual Refresh (950175)
Camera	Add Touch focus to Camera (966830) Add Face Tracking Capability to Camera (966828) Add visual feedback for Continuous Auto Focus (966829 and 1019965)
Settings	
Ringtone Management	Create a ringtone from an audio file downloaded from the browser (960333) Assign new ringtones using songs in the Music app (960329) Delete ringtones that I do not want any more (960331) Add/replace 'FxOS signature' ringtones to default set of ringtones (1014009)

Firefox OS Architecture

The aim of Firefox OS is to allow full device integration for Web applications. This provides Web developers, working with HTML, CSS, and JavaScript, with the same capabilities as those building native applications. Firefox OS is architected to support the use and development of standardized solutions for application developers to use. The architecture also enables contributors to add new device capabilities and other applications needs as they are identified.

The Firefox OS architecture is comprised of several components; they are Gaia, Gecko, and Gonk.

- **Gaia:** The user interface of Firefox OS. Everything the user interacts with is part of Gaia. This includes applications such as the Phone, Email, and Browser, and system functionality such as the lock screen, home screen, and notifications. Like all applications on Firefox OS, Gaia is written entirely in HTML, CSS, and JavaScript.
- **Gecko:** The “application run time” of Firefox OS. Gecko implements the open standards for HTML, CSS, and JavaScript and is optimized for the operating systems that Gecko supports. Gecko consists of, among other things, a networking stack, graphics stack, layout engine, a virtual machine (for JavaScript), and porting layers, which enable it to run on operating systems such as Gonk.
- **Gonk:** The lower-level “operating system” of Firefox OS, Gonk consists of a Linux kernel and a user space hardware abstraction layer (HAL). The kernel and several user-space libraries are built using open source distributions such as Linux, libusb, and bluez. It could be said that Gonk is a simple Linux distribution.



More details about the architecture of Firefox OS can be found at <https://wiki.mozilla.org/B2G/Architecture>

Hardware Recommendations

Firefox OS is designed to operate on as many different types and tiers of mobile hardware as possible. The minimum specification is a single core CPU with a processor speed of 800MHz and 256MB of RAM (specs subject to update over time). Devices also require a capacitive touch screen. The table below summarizes the recommended hardware specifications for Firefox OS devices:

Processors	
CPU	Single Core ARMv7 with a minimum of 800MHz Recommended: Cortex A5 or better, ARM7a with NEON
GPU	Adreno 200 class or better
Input Capabilities	
Buttons	<ul style="list-style-type: none"> • Power/Sleep — on/off • Volume — rocker key • Home (at bottom) • Camera (Optional)
Camera	<ul style="list-style-type: none"> • Rear Facing (>=2MP recommended) • Front Facing (optional) • Both video capable
Microphone	<ul style="list-style-type: none"> • Built-in phone microphone • Support via headphone jack
Output	
Display	<ul style="list-style-type: none"> • Capacitive touchscreen, supporting: <ul style="list-style-type: none"> ○ 16M colors ○ multi-touch ○ Pixel density of 160ppi ○ HVGA (320x480 pixels) — also supports qHD and WVGA
Audio/Haptics	<ul style="list-style-type: none"> • Speaker • 3.5mm headphone jack • Vibrator
Connectivity	
Wi-Fi	<ul style="list-style-type: none"> • Wi-Fi 802.11 b/g/n
Bluetooth	<ul style="list-style-type: none"> • Support for V2.1 and above
Data/Messaging	<ul style="list-style-type: none"> • Data network (any of): LTE, 4G, 3G, GPRS, EDGE, WCDMA, or CDMA • SMS • GPS or A-GPS

Memory	
RAM	<ul style="list-style-type: none">• RAM: minimum 128MB
Storage	<ul style="list-style-type: none">• Internal Flash memory — minimum 512MB• External Flash — SD-card support
Other	
Sensors (optional)	<ul style="list-style-type: none">• Accelerometer• Proximity• Ambient light
Misc.	<ul style="list-style-type: none">• USB — micro-USB 2.0

Compatibility & Standards

Firefox OS provides a platform based on web standards such as HTML5, CSS3, and JavaScript. It also supports WebAPI, which provides web apps with a suite of compatibility and access classes and functions that allow for access to device hardware (such as battery status or the device vibration hardware) and data stored on the device (such as the calendar or the contacts list).

By adding the WebAPI, we hope to expand what the Web can do today and only proprietary platforms were able to do in the past.

More information and documentation for WebAPI can be found at <https://developer.mozilla.org/WebAPI>

Radio Interfaces and Network Features

Firefox OS provides comprehensive support for IP networking and the mobile network standards found worldwide:

- Support for 4G (LTE and 4G CDMA), 3.5G (HSPA+ and HSDPA), 3G (CDMA and UMTS), 2.5G (EDGE), 2G (GPRS and CDMA), GSM
- Comprehensive APN support, such as:
 - DUN APN
 - IMS (IP Multimedia) APN
- IPv4 and Ipv6 support

Additional features include:

Feature	Description
Reading SIM cards	The device will read a CDMA SIM cards content even if it is GSM mode.

International & Localization Features

Firefox OS supports both regional and international localization (l10n) requirements. As Firefox OS launches in new markets, new locals will be added.

Firefox OS supports several internationalization capabilities:

- Character encoding using Unicode text
- Multi-language support (based on market launches)
- Numbers/currency — support for international currency symbols and currency/number formats
- International date/time formats and time zones
- Address & phone fields (postal code, phone numbers, country codes)
- Keypad layout and international character sets
- Support for predictive text and translation in multiple languages

Currently, Firefox OS supports the following 56 languages):

Local	Language
af	Afrikaans
as	Assamese
bg	Bulgarian
bn-BD	Bengali (Bangladesh)
bn-IN	Bengali (India)
ca	Catalan
cs	Czech
cy	Welsh
da	Danish
de	German
ee	Ewe
el	Greek
en	English
es	Spanish
eu	Basque
ff	Fulah
fr	French
fy-NL	Frisian
gd	Scottish Gaelic
gl	Galician
ha	Hausa
hi-IN	Hindi (India)
hu	Hungarian
ig	
it	Italian
ja	Japanese
km	Khmer
kn	Kannada
ko	Korean
lt	Lithuanian
ml	Malayalam
mr	Marathi
nb-NO	Norwegian (Bokmål)
ne-NP	Nepali
nl	Dutch
or	Oriya
pa	Punjabi
pl	Polish
pt-BR	Brazilian Portuguese
ru	Russian
si	Sinhala
sk	Slovak

Local	Language
sl	Slovenian
son	Songhay
sr - Cryl	Serbian Cyrillic
sr - Latn	Serbian Latin
sv-SE	Swedish
sw	Swahili
ta	Tamil
te	Telugu
tr	Turkish
ur	Urdu
xh	Xhosa
zh-CN	Simplified Chinese
zh-TW	Traditional Chinese
zu	Zulu

Security Model

Firefox OS implements an open application security model. It allows developers the flexibility to use common design patterns for web applications while mitigating the risks that come with exposing sensitive API features. Security is of paramount importance to Mozilla and the security model for Firefox OS was built with Mozilla's mission in mind. It has several key foundational principals:

- Maintain the core strengths and flexibility of the web
- Protect the security and privacy of the user
- Protect the device from poorly written and malicious applications
- With additional privileges come additional responsibilities for the developer and app store
- User consent and control — treat the user with respect and present them with choices they can make informed decisions about

Permission Types

An application's permissions define which device capabilities it can access. For example, to access a device's location an application would have to be explicitly granted access to the Geolocation API. There are two types of permissions on Firefox OS, those that can be granted implicitly to the application and those that must be granted explicitly by the user.

Explicitly Granted Permissions are those that need to be enumerated in the manifest and require user consent at "time of use" to enable. This consent can be provided during an install-time prompt or an in-content user interface. The user can also inspect and modify the explicit permissions for any app using Permissions Manager.

Implicitly Granted Permissions are also enumerated in the manifest. They are granted to the application without requiring any user interaction. The user may be able to inspect, but not modify, the implicit permissions that an application holds. The type of application determines which permissions can be implicitly granted.

Application Types

The Firefox OS security model defines four different types of Web applications. The application range from normal web content to highly privileged internal (certified) applications. Each type has different requirement, properties, and restrictions.

Normal Web Content is not privileged, nor is it an installed application. However this type of content is considered under the WebAPI security model. Normal web content has the following properties:

- No app store involved
- No manifest or installation experience
- No restrictions on origin or transport (i.e. HTTPS not required)
- All explicit permissions are requested at runtime, not persisted by default
- Most permissions requested using web intents

Installed Applications prompt the user for permissions at runtime and do not persist those settings. These applications are *unauthenticated* and may or may not be acquired from an app store. Installed applications have the following properties:

- No restrictions on transport but limited to one app per origin (an app may load assets and code from other origins)
- Permissions are opt-in at install and runtime, and are limited to those enumerated in the manifest
- No SSL indicators: trust is limited to content the user is willing to share with any website and maximum privileges are limited to what is available to normal web content
- All explicit permissions are requested at runtime and not persisted by default
- Most permissions requested using web intents
- Same origin enforced

Installed, Privileged Applications prompt the user for permissions at runtime and persist those settings. Privileged applications are authenticated and must be approved and distributed through an app store. These applications have the following properties:

- Comprised of an explicit list of assets
- Approved by an app store after a code review or some equivalent risk management analysis
- The manifest, which contains the list of assets and their corresponding hashes, must be signed by the app store
- At install time the application's assets are verified and stored locally in appcache
- Requires a *Content Security Policy* to mitigate content injection attacks and maintain application integrity
- All explicit permissions are requested at runtime and persisted by default
- The user can monitor permission state and change the application's permissions
- Privileges granted are limited to the explicit list of application assets
- No same-origin restrictions for app content; same origin still enforced for non-app content

Internal (Certified) Applications are a special class of applications that require significant or low-level system access. Internal applications always require approval by the carrier or OEM. This group of applications included the system settings app, the default Phone application (to ensure emergency service), and radio and power management. Internal applications have the following properties:

- All permissions are implicit
- The user cannot modify permissions (as modification could negatively impact the operation of the device)
- Approval of certified apps is limited to authorized app stores
- Requires a strict Content Security Policy of “default-src ‘self’”
- Not a common application type; reserved only for critical applications
- No same-origin restrictions for app content; same origin still enforced for non-app content

Full details of the implicit and explicit permissions for each WebAPI as well as threat assessments are available at: <https://developer.mozilla.org/WebAPI> within the specification for each API.

User Interface

The Firefox OS provides an intuitive, easy to learn and easy to use user interface. A team of User Experience experts defines, refines, and reviews every component of the user interface. Their work resulted in a significant visual redesign of the OS for version 2.0. The user interface style guide for this update can be found at <https://www.mozilla.org/en-US/styleguide/products/firefox-os/>.

The Firefox OS UX team has developed a set of user experience guidelines including design patterns, building blocks, and a style guide.

More information about the Firefox OS UI can be found at <https://developer.mozilla.org/Apps/Design>

Firefox OS System Features

The Firefox OS has several build in system features such as Sound, Keyboard, and the First Run User experience. The system features stretch across all applications on the device and provide several elements of functionality that is essential for an excellent user experience. This section of the document describes several of the main system features of Firefox OS.

For a complete listing of the system features and more information on the individual elements, please visit the system section of the Gaia wiki at <https://wiki.mozilla.org/Gaia#System>

Usage, Network Data & Consumption Control

Firefox OS provides the user the ability to manage their mobile data consumption, monitor, activate and deactivate network usage, and to manage credit. The consumption control features are summarized in the table below. Note that usage monitoring and reports are for informational purposes only, the wireless carrier may measure usage differently.

Feature	Description
Connectivity Settings	The user can adjust connectivity settings to enable/disable mobile data usage.
View prepaid mobile usage and request refresh	Prepaid users can view current balance of mobile usage (minutes, texts, and data) and request a refresh. (For supported Operators and markets only.)
Configure prepaid mobile usage	The user can set whether their subscription is prepaid or postpaid. (For supported Operators and markets only.)
Top-up via USSD	Prepaid users can top-up account via USSD. (For supported Operators and markets only.)
Set-up tutorial for cost-control features	Prepaid users can go through a set-up tutorial for cost control features.
Set low balance alerts	Prepaid users can set thresholds for low balance alerts.
Set billing cycle	Postpaid users can configure the billing cycle.
Reset phone activity settings	Postpaid users can reset phone activity settings.

More information about Consumption control can be found at:

- <https://wiki.mozilla.org/Gaia/System/ConsumptionControl>.

Partner Device Variant and Customization

Firefox OS provides a range of build time configuration options that enable device manufacturers to set OS and application capabilities to match hardware and market requirements, including:

- Camera configuration for features such as resolutions and formats supported

Operator Variant and Local Customization

Operator Variant refers to the ability of a carrier or mobile operator to configure a Firefox OS device to operate correctly on their network or to apply local market customizations. Firefox OS provides customization capability based on information obtained from the SIM card. This allows for a device to be properly configured for a local market, while not requiring any underlying changes. It enables a single hardware/software configuration that can be used in multiple markets.

Feature	Description
Access Point Names auto-configured	Upon starting device for the first time, APNs are auto-configured based on the SIM card inserted.
Voicemail phone number auto-configured	Upon starting device for the first time, voicemail number is auto-configured based on the SIM card inserted.
Cell broadcast channel auto-configured	Upon switching on the device, the cell broadcast channel is auto-configured based on the SIM card inserted.
Enable/Disable Cell Broadcast	The user can manually enable and disable a cell broadcast.
Operable Under Message Classes 0 and 1	The user can operate a device under message class 0 and 1.
SMS encoding bit variation	Upon the starting device, SMS encoding bit variation is auto-configured based on SIM card inserted.
A-GPS Settings	Upon starting the device for the first time, A-GPS settings are auto-configured based on the SIM card inserted.
Preload Contacts	Contacts, such as emergency numbers, can be automatically added to the contacts app based on the MNC (network code) and MCC (country code) on the SIM.
Support Contacts	Supports contacts (found under Settings -> Help) can be customized based on the MNC/MCC on the SIM.
Cell Broadcast Configuration	The cell broadcast channels as well as the default on/off can be configured based on the MNC/MCC on the SIM.
Preload of Applications	Applications can be pre-loaded based on the MNC/MCC found in the SIM. This enables locally specific core and custom applications to be loaded.
Home Screen Wallpapers	Upon starting the device for the first time, the available and default Home Screen wallpapers are auto-configured based on the SIM card inserted.

Feature	Description
Preloaded Bookmarks	Upon starting the Browser for the first time, the preloaded bookmarks are auto-configured based on the SIM card inserted.

OMA Client Provisioning

Firefox OS supports Open Mobile Alliance Client Provisioning. This allows an OEM or operator to provision a device over the air, using WAP push and with minimal user interaction.

Feature	Description
Settings Configuration	An OEM can configure which settings can be modified based on operator requests.
Client Configuration	An operator can send a client configuration document to the device. This document defines the correct configuration for the device and network.

Do Not Track

The Do Not Track capabilities of Firefox OS allow the user to control how their privacy and personal information is managed on their device.

Features:

- Ability to set global Do Not Track preferences
 - The user can choose from (1) Do not track, (2) allow tracking, or (3) no preference
- The system enforces Do Not Track preferences across all applications
- Provides the user with the ability to wipe their personal data from a device

File Management

The file system is a means to store, retrieve, and update data on the device and is controlled by the Device Storage API. The files system API is based on the W3C standard:

<http://www.w3.org/TR/file-system-api/>.

Features:

- Files indexed/organized automatically, made available to appropriate applications
- USB file transfer to/from a computer as a mass storage device
- Transfer to/from an SD card on another device
- Available storage monitoring
- Automatic download retry upon failure

SD Card Support

Firefox OS provides support for SD Cards including appropriate functionality for mounting and dismounting cards and identifying unformatted cards.

First Run Experience and user tutorials

The Firefox OS first run experience provides the first point of interaction between Firefox OS and the user. It introduces the user to the phone's software and user interface, and assists the user with several configuration steps such as setting up their contacts and email.

Feature	Description
Welcome screen and language selection	When the device is first powered on the user is presented with a welcome screen and asked to select the language they want to use.
Wi-Fi setup	The user is prompted to setup a Wi-Fi connection.
Contact import from SIM or Facebook	The user is given the opportunity to import contacts from their SIM card(s) and Facebook account.
Date/time setting	The user is able to set the current time and time zone.
Touch screen tutorial	The user is provided a tutorial on using the devices touchscreen.
Edge Gestures tutorial	The user is provide a tutorial that show how they use edge gesture to navigate between open apps. The tutorial is also available to be reviewed after the first run.

Identity (Firefox Account)

Identity is managed through a Firefox account. Using a Firefox account allows the user to sign-in to, connect, and pay for items that are in the marketplace.

Feature	Description
Create Persona	The user can create Firefox Account and sign into Firefox Marketplace. Firefox Account can be used for identity and payments in marketplace.
In-App Purchases	The user can take advantage of in-app purchases and avoid the inconvenience of having to leave the app for transactions.
Trusted UI	The users can enable/disable TrustedUI to be able to make reliable and trustworthy purchases.

Keyboard

The virtual keyboard is the main input method for non-gesture/touch events. It's easy to use, localized, context sensitive, and offers multi-touch support.

Feature	Description
Language switching	The user can operate keyboard in any of the supported languages.
Toggle between numeric and alphabetical input	The user can tap one button to toggle between numeric and alpha inputs.
Vast library of characters	The user can tap one key to view currency symbols and special numerical characters.
Predictive text and word suggestions	The user is supported by predictive text and word suggestions once they begin typing.
Context aware	The keyboard can adjust its layout based on the type of the input field. There is support for Date/Time, number, URL, name, and email fields.
Keyboard Switching (IME)	The user can switch between multiple keyboards to utilize different languages or key layouts.

Gesture-based UI

Firefox OS has a gesture based UI enabling users to efficiently interact with the device with tap-to-select, scroll, and pinch to zoom functionality.

Features:

- Tap to select, tap and hold, and double tap (action depends on app)
- Scrolling and panning
- Pinch to zoom
- Edge gestures to navigate between apps

Internationalization and Localization Behaviors

Apps and System Components are affected by localization and the appropriate UI will be presented according to language and regional settings.

Feature	Description
Date and Time Labels	The users can observe and interact with date and time labels in the default regional settings for presenting time and date, and 12/24-hour time. These can be seen in Gaia apps such as calendar, email/messaging, call log, notifications tray, home screen, and status bar.
View time and date information in the correct format	Pickers enable users to view time and date information presented in the correct format. These include time and date pickers that provide for 12- and 24-hour formats.
Language Orientation	The users may observe a change in screen layout and behavior according to their specified language orientation, such as: <ul style="list-style-type: none"> • Button placement on Alerts, Dialogs, and Entry Sheets. • Screen navigation in a hierarchy or non-looping carousel. • Single-line controls with descriptive text (e.g. a text label + on/off switch).

Task Manager

The Task Manager provides a tool for managing and switching between applications that are running on a device. The task manager is accessed through a long-press of the home key.

Feature	Description
Manage apps that are running	The user can quickly browse and stop apps that are running.
Switch between apps that are running	The user can quickly switch between apps that are running.
View recently used apps	The user can access recently used apps and easily switch between them.

Notifications

Notifications are used to inform the user of different types of events. Notifications can be one of several types:

- Full Screen — A very important notification, that interrupts all activity, such as an incoming call
- An Alert — Interrupts and requires an action before proceeding, such as a calendar event
- Passive — Appears and goes away, such as a new email notification
- Lock Screen notification — Are displayed until the phone is unlocked, used for app related notifications.
- Status Bar (Utility Tray) — An icon update used to indicate a state of the device, such as network connectivity.
- Sound — An audio tone and/or vibrate action is used.

Feature	Description
Access Notifications	The user can view notifications in the Notification Center and scroll through them in a chronological list.
Clear	The user can clear notification messages.
Notification Display	The user receives several types of Notifications: status bar, passive, alert, and full screen.
Notification Types	The user receives notifications for SMS messages, missed calls, alarms, calendar alerts, emergencies, and from apps with notification permissions.
Respond to Notification	The user can easily respond to or dismiss a notification as it arises.
Status Bar	The user can view the number of notifications in the Status Bar.
User Configuration	The user can configure notification method on a per-app basis.
Audio and Vibration	The user can include audio and vibration in notifications.
Relative Time Display	The user will see relative time in time stamps (for example, '13 minutes ago' instead of '2:45pm').

Feature	Description
Prepaid usage indicators	A Prepaid user can check account balance, consumption, and top-up directly. (For supported Operators and markets only)
Manage Settings	The user can manage Wi-Fi, Cellular Data Connection, Bluetooth connectivity, and enable/disable Airplane Mode from within the Notifications Center.
Programmatic Close	Notifications can be cleared programmatically when they're no longer needed or relevant.
Replace	Notifications can be programmatically replaced with new notifications if their information has been changed.

SIM Lock

An operator can optionally lock a phone to only accept their SIM cards.

Codecs

Firefox OS supports encoding and decoding of audio and video file and network streams. The codecs that are currently supported are:

Feature	Description
Video decode	The user will be able to play a video with H.264 / MP4 (*.mp4 or *.m4v), MPEG-1(*.mpeg or *.mpg), Ogg (*.ogg, *.ogv, or *.ogx), 3GP (*.3gp), and VP8 (*.webm) encoding.
Video encode	The user will be able to record video from camera app with H.264 / MP4 (*.mp4) or 3GP (*.3gp) encoding.
Audio decode	The user will be able to play audio files in MPEG-1 layer III (*.mp3), AAC (*.m4a, *.m4b, *.m4p, *.m4r, *.3gp, or *.mp4), AMR (*.amr), Vorbis (*.oga, or *.ogg), Opus (*.opus), and WAV (*.wav) formats.
Audio encode	The user will be able to record audio in Opus (*.ogg) format.

Sound

Firefox OS uses sound in many system and core applications. Sound types are listed in the table below.

Sound Type	Description
UI Sounds	Sounds associated with certain UI interactions, such as button presses and keyboard keys.
Application Sounds	Sounds associated with certain events set by an application.
Notification Sounds	Sounds associated with notifications according to notification, dependent on type, settings, and privacy.
Alarm Sounds	The Alarm sound supersedes all other sounds when a scheduled alarm event occurs. All other sounds are muted.
Phone call sounds	Sounds from the ringer of a phone call will pause and mute any other audio content playing.
Ringtones	The user can set and hear ringtones and set volume.
Vibration	The user can set the vibrator to be associated with notifications.

Sound event features are listed in the table below:

Feature	Description
Sound Priorities	For users, certain sounds will be intelligently prioritized over others, for example alarms over music over UI.
Sound behaviors	Music automatically fades out when an alarm rings.
System wide controls	The user has access to system wide volume controls.
High Volume Warning	The user is warned, through a dialog box, if the headphone volume is set to a dangerously loud level.

Status Bar & Status Bar Overlays

The status bar has several areas and serves to give users quick information on the state of their phone from looking at icons at the top of the screen. There are two main modes, normal and overlay.

Normal modes:

- Notifications — shows number of notifications (new or available in Notification Center)
- Permissions — shows active, in use permissions, including:
 - Geolocation (active/recently used)
 - SMS (outgoing) showing message was sent, animated
 - Audio/Video recording (active/recently used)
 - Data Sharing (Tethering or USB Sharing)
- Radio information, including:
 - Tethering
 - Signal strength or searching and Roaming on
 - Data connection
 - Wi-Fi, type of data connection (on and signal strength)
 - Type of connection — LTE, 4G, 3G, E, or GPRS
 - Data Activity — 1 pixel on top showing data being transmitted
- Bluetooth connected
- Airplane mode — replaces Bluetooth, tethering, signal, data, and Wi-Fi.
- Other:
 - Battery level
 - Time
 - Audio muted
 - Vibrate only
 - Alarm set
 - USB Mass storage device connected

Status Bar Overlays

The Status Bar is used by passive notifications. These types of notifications can be acted on from any screen and they include several types of status information uses:

- Active Call Information, allowing user to quickly navigate to call (when on hold or another application is on the screen).
- Notification Information — passive notification.
- Active Alarm Information

Features:

Feature	Description
Edge gestures	The status bar is moved with the home screen or app 'sheet'.

System Overlays

System overlays are full screen notifications that indicate certain special activities or events. Overlays include:

- Battery notifications
- Volume control
- Connected to a computer

Feature	Description
Volume Overlays	The user can see a visual representation of volume changes as it's increased or decreased.
Ringer Overlays	The user can see visual representation of changes between Ringer, Vibrate, and Silent mode.
Charging notification	The user is notified with a visual overlay when the USB charger is plugged into the device.

System Updates

System updates are supported.

Feature	Description
Notification	The user is notified of available updates.
Manual Check for System Updates	The user can manually check for system updates and update the system.
Use Device while downloading update	The user can continue to use device while download of the update is in process.
Download Status	The user can view download status of system updates.
Cancel Download	The user can cancel a download in progress.
Requirement Check	The user is notified if insufficient space or battery life is available to conduct downloads. The user can't override.
Review Update	The user reviews the details of the update before and after update: file size, and information such as permissions set.

App Updates

Application updates are can be automated or manually scheduled.

Feature	Description
Automatic App updates	The user can set applications to update automatically at regular intervals.
Manual App updates	The user can manually update applications.
Completed App update notification	The user is notified when application update is completed.
Download status	The user can view and track the download progress of applications.
App Error	The user is notified of application errors that occur when trying to launch an app or in the process of downloading.

Home Screen

The Home screen serves as the main screen for the phone and was redesigned in version 2.0 to accommodate the edge gesture navigation between apps. As a result, the home screen now features a vertically scrolling apps grid view that enables the user to easily find and launch applications or browser bookmarks. The home screen provides access to setting and notifications. Features of the Home Screen are listed in the table below.

Feature	Description
Collection of apps and bookmarks	The Home Screen provide a collection of both installed apps and browser bookmarks the user chooses to add to the Home Screen.
Vertical scroll	Home screen provides a list of apps in a vertical scroll with scroll release animation.
Easy organization of installed apps	The user can arrange apps on the home screen in their order of preference. The user can add dividers to group apps.
Easy recognition of apps	The user can recognize the installed apps on the home screen according to their icons and app names.
No name crowding in apps	The text used to identify apps is optimized and limited such that the user can clearly read the names of apps, without adjacent longer names overlapping.
Deletion of Apps	The user can delete apps in order to clear away applications and content that is no longer needed. The user must confirm before an app is deleted.
Retaining Essential Apps	The user cannot inadvertently remove apps that provide essential features, these apps are "locked."
Managing Essential Apps	The user can quickly enter edit mode that provides them the ability to manage installed apps / web content, so that they can move and delete apps easily.
Set Wallpaper	The user can change or set the wallpaper from the home screen, any of the app pages, and in the settings menu.
Exiting Apps	The user is always returned to the Home screen after exiting an app.

Feature	Description
Home Screen Adaptive Search	Using the adaptive search capabilities on the home screen users can find apps related to their search terms quickly and easily. Applications from Marketplace, from the web, and those already installed on the device are included in search results.
Smart Collections	The user can easily access their existing apps and discover new apps according to their interests using Smart Collections.
Edge gestures	The Home Screen provides edge gesture support to enable users to navigate from it to open apps.
Unlocking a device	The user is returned to the scroll position visited most recently after unlocking their device.

Lock Screen

The Lock Screen's primary function is to prevent accidental or unauthorized device access by forcing manual inputs to access full functionality. The lock screen received a visual refresh in Firefox OS 2.0.

Feature	Description
Lock-Screen Notifications	The user can set incoming notifications to be displayed on the Lock screen, allowing for incoming notifications to be viewed quickly and without unlocking the device. Only notifications that have arrived since the last time the device was unlocked are shown.
Battery indicator for lock-screen	The user is alerted about low battery life on the lock screen, so they can appreciate when charging is needed without having to unlock the phone.
Date and time indicator for lock-screen	The user is shown current date and time on the lock screen.
Mute indicator for lock-screen	The user is shown whether the phone is muted.
Network indicator for lock-screen	The user is shown network connection status — and carrier name, if applicable.
Lock-screen wallpaper	The lock-screen uses the same wallpaper the user has chosen for the home screen.

Feature	Description
Accessing camera	The user can quickly access camera from the lock-screen to capture moments.
Prohibit gallery access from Lock-Screen	If a password is in place, the user cannot access the Gallery from the Lock screen version of the Camera app, maintaining user privacy in the event that someone else is looking at the user's locked phone.
Passcode Lock	If the "Passcode Lock" option is turned on, when a user attempts to access the device, they are prompted to enter a phone's security password.
Passcode Failed Attempt Lock	Repeated failed attempts to unlock phone can result in timed lock-downs (for example the device locks for 5 minutes after 3 failed attempts, and for 1 day after 6 failed attempts, and so on).
Adjust volume	The user can adjust phone's volume from the lock-screen.
Put phone to sleep	The user can put phone to sleep from the Lock screen (through the use of the power button).
Emergency Calls	Emergency calls can be made from the lock screen with or without a SIM installed.

Dual SIM

From Firefox OS version 1.3 dual SIM cards devices are supported.

Feature	Description
DSDS (Dual SIM Dual Standby) Support	Firefox OS supports the use of two SIM cards, with one designated as the primary and the other as secondary. Only one SIM can be used for calling at a time.
Setting default SIM	The user can set which SIM is to be used for activities such as calling, SMS, or data connectivity on the phone. For calling and messaging the user can opt to be prompted each time.
SIM Settings options	Both SIM cards are accessible from setting and enable all features to be set, such as PIN and PUK codes.
PIN entry	User can enter SIM PIN appropriately, such as on device start up.

Feature	Description
FDN support	The user can managed FDN for each SIM and the FDN is activated for the SIM in use.
STK menu and events	The user can access and use the STK menu from the active SIM and access both SIM's STK menus for settings.
Voice mail notifications	The user will receive separate notifications for the presence of voice mail on the mailboxes for each SIM.
Call features	The user can: <ul style="list-style-type: none"> • Make a call on the default SIM. • Select which SIM a call will be made over. • See which SIM is in use for the active call. • See which SIM was in used for all or missed call (Call log).
Call from Contact features	From Contacts the user can: <ul style="list-style-type: none"> • Make a call on the default SIM. • Select which SIM a call will be made over.
Message features	The user can: <ul style="list-style-type: none"> • Send a message using the default SIM. • Select the SIM to use to send a message. • See which SIM a message was received on.

Wi-Fi

Firefox OS supports Wi-Fi connectivity, if it's supported by the device hardware. Additional features are listed in the table below.

Feature	Description
Wi-Fi Set-up during First Run Experience	The user is walked through the process of setting up a Wi-Fi connection during the First Run Experience.
Wi-Fi Security	Firefox OS supports WEP, WPA-PSK, and WPA-EAP security for Wi-Fi networks.
Automatic Wi-Fi Setup using WPS	Firefox OS supports the use of WPS to 'automatically' configure a Wi-Fi Connection.
Wi-Fi Status in Notification Bar	The current Wi-Fi Status is shown in the notification bar when Wi-Fi is enabled.

Feature	Description
EAP-SIM Support	Firefox OS supports the use of EAP-SIM authentication for Wi-Fi Authentication, including support for PEAP and TTLS authentication protocols.
Act as a Wi-Fi Hotspot	A Firefox OS phone can act as a Wi-Fi hotspot to allow its connection to the internet to be shared.
WISPr Support	Support is provided for the Wireless Internet Service Provider roaming standard enabling user to roam between Wi-Fi hotspots.

Bluetooth

Bluetooth provides short-range wireless connectivity to various types of Bluetooth peripherals. The primary features of Bluetooth 3.0 support on Firefox OS are listed in the table below.

Feature	Description
Adjust volume	The user can adjust the volume from a Bluetooth headset or using the volume rockers on their Firefox OS mobile phone.
Answer calls	The user can answer an incoming phone call from a connected Bluetooth headset.
Hang up phone calls	The user can hang up a phone call from a connected Bluetooth headset.
Send and receive files	The user can send or receive files over a Bluetooth connection and see the transfer progress in the notification center.
Cancel send and receive of files	The user can cancel send or receive of files over a Bluetooth connection at any time.
View status of a file transfer	The user can see the status of file transfer over a Bluetooth connection and whether the transfer encountered an error, was cancelled, or is complete.
File Transfer Approval	If a connected device is requesting to send a file, the user sees a dialogue that includes the device name, the file name, and a YES/NO option to accept the file or not.
File Transfer Queuing	Multiple files can be queued for transfer over a Bluetooth connection.

Feature	Description
Audio Streaming Support	<ul style="list-style-type: none"> A2DP — The device can stream audio over a Bluetooth connection to an A2DP capable receiver. AVRCP1.0 / AVRCP1.3 — The device can remotely control audio headphones, car audio systems, or stand-alone speaker units.
Bluetooth Stack	Firefox OS supports the BlueDroid Bluetooth stack.
Pairing under lock screen	The user is alerted on Lock Screen of incoming Bluetooth pairing requests and can complete pairing by tapping the Lock Screen notification to open the pairing UI.

Near Field Communication (NFC)

NFC allows for close-range, contactless transmission of information between a phone, NFC tags, NFC enabled terminals, or other NFC enabled devices

Feature	Description
Bluetooth Pairing	NFC can be used to initiate pairing of the phone and a Bluetooth peripheral.
Read from NFC Tags	The phone can read the information from NFC (NDEF compatible) tags. Where the tag contains a URL, the URL is opened in the Browser.
Contact sharing	Enables the sharing of vCard contact details, including various variants such as MIME types such as text/x-vcard and text/x-vcard.
API	An API enables apps to utilize supported NFC functionality, including pairing, initiating communication and sharing content and/or data over NFC.
URL Sharing	Enables the user to share the URL of a page being browsed with another device using NFC
Tap-to-Pay	Support for demonstrating Tap-to-Pay features where the user has appropriate secure elements installed on their phone.

WebRTC

Support is provided for the WebRTC protocol to provide for direct (without the need for a third-party service) voice and video chat between users, initiated using the users mobile phone number. WebRTC Support was added to the Firefox Platform (Gecko) and those platform changes are included in Firefox OS 2.0

Feature	Description
H.264 hardware support to WebRTC	Ensure that H.264 video is decoded in hardware (when supported), improving battery performance.

RTSP

Firefox OS provides support for Real Time Streaming Protocol (RTSP) to enable the streaming of audio and video to a device.

Feature	Description
RTSP over UDP/IP & TCP/IP	RTSP streaming over the UDP/IP and TCP/IP protocol
Protocol redirecting	Support for cross-protocol redirects from HTTP to RTSP enabling users to start streaming from a web page.

Crash Reporting

The Crash Reporting functionality informs users of crashes in the Firefox OS system and in any running application. Once a crash has been reported, the user can optionally send these reports to Mozilla and/or their Operator.

Feature	Description
First Time System Crash Reporting Notification	The user is informed the first time that Firefox OS phone has a system crash and can choose to send a report about it or not.
First Time App Crash Reporting Notification	The user is informed the first time that an app in Firefox OS crashes and can choose to send a report about it or not.
Send report of Firefox OS system crash	The user can report a subsequent crash on Firefox OS if reporting is not automated or they can elect not to report.
Crash and reboot detail notification	The user receives a crash and reboot report when the system or an app closes suddenly.
Crash report and use detail	The user receives crash report containing information on report and how Mozilla is using crash detail.

Core Applications

A group of core applications on Firefox OS provide the user with the majority of functionality. This key group of applications ranges from the email application to the clock. The following section details the main features of each application that currently ships on Firefox OS.

For a complete listing of the core applications and more information on the individual applications, please visit the Apps section of the Gaia wiki at <https://wiki.mozilla.org/Gaia#Apps>

Phone

The Phone app is the primary method by which a user interacts with the Phone on Firefox OS. It offers phone calling functionality, recent/history of calls, favorites, voicemail, and contacts. The app received a visual refresh as part of Firefox OS 2.0.

Feature	Description
Make calls from Phone home screen	The user can manually enter phone number or select contact from phone book to call.
View call log	The user can view "All" and "Missed" calls from the call log, as well as tap to select individual call items to return calls. In Dual SIM devices, the SIM used for the call is shown.
Dialing from Call Log	The user is able to select a call log item and directly dial the number (without the contact details being opened and number having to be selected from Contact details). Having to
View and select contacts	The user can view and tap to call contacts from the Phone screen. Or, the user can elect to view contact detail only.
Mute/unmute microphone during call	The users can mute/unmute the microphone during a call.
SIM card missing notification	The user is alerted when a call is attempted without a SIM card installed.
Add dialed number to existing contacts	The user can add previously dialed number to existing contacts.
Add call log number to existing contacts	The user can add call log number to existing contacts.
Dial number suggestions from existing contacts	The user is given dialing number suggestions from existing contacts.
Airplane mode notification	The user is alerted when a call is attempted in airplane mode.
Notifications	The user can customize notifications for incoming and missed-calls.
Answer Call	Incoming calls can be answered though the use of a gesture when the device is locked.
Calling Features	Speakerphone, number/name display, voicemail and call

Feature	Description
	waiting, call barring, and call hold are supported.
Redial last called number	The user can display and call the last number in the call log from both the phone application and an attached Bluetooth headset.
Dual SIM selection on dial	A long press on the dial button provides the user with the option to select the SIM to be used for the call.
Dual SIM in use indicator	The SIM on which the current call (outgoing or incoming) is being made is shown in the active call screen.
Call reject messaging	The user is able to define SMS messages to be sent when an incoming call is rejected.
FDN Support	The user can enable or disable FDN, as well as configure the phone numbers/short codes in the FDN list. FDN is available if it's supported by the SIM.
Conference Calling	The user can join up to 5 participants in a conference call. The conference call can be placed on hold while new participants are added.
Call ended message	A screen is displayed to the user once the call has ended.
Emergency Call UI	An emergency-call specific UI is used when a user makes an emergency call. Includes specific format for Japan.

Contacts

The Contacts app offers a central location to store and manage the user's contacts. It features a list of all contacts and their details. It's also possible to launch several applications directly from the contact list. The app received a visual refresh as part of Firefox OS 2.0.

Feature	Description
Find contacts using alpha scroll	Contact list view includes a sidebar displaying the locales alphabet (alpha scroll). The user can then use the alpha scroll to a letter and display the contacts sorted under that letter.
Contact sorting	Contacts can be sorted by first name or last name (using either literal or phonetic names for Kanji).

Feature	Description
View contact information from contact profile	<p>After selecting a contact, user can view phone number, email, and birthday, as well as send Facebook messages and wall posts. Messages and phone calls to users can be initiated too.</p> <p>Contact detail includes:</p> <ul style="list-style-type: none"> • Name • Photo • Phone Number • Email Address • Physical Address • Company • Notes • Facebook contact information (if linked)
Manage Contact	<p>The user can click on contact to modify contact detail or add a new contact.</p> <p>Deletion of multiple contacts is supported.</p>
Add Contact	<p>The user can add contact by selecting the plus sign on the contacts menu.</p>
Manage contact settings	<p>The user can leverage contact settings to order contacts by first or last name, import contacts from SIM card, from media card, or import contacts from Gmail, Outlook.com, and Facebook.</p> <p>Note: contact pictures from Facebook are not displayed when imported to an existing contact on Firefox OS.</p>
Contact actions	<p>Send Email or message (SMS/MMS), call, share, and add to favorites.</p>
Dual SIM contact actions	<p>On devices with Dual SIM support call can be made on the default SIM (by default) or the SIM card selected.</p>
Share Contact	<p>The user can share contact information (as a vCard) through a Bluetooth connection.</p>
Contact Export	<p>The user can export one or more contacts to either the USIM or media card. Note: The export to media card uses the vCard format for contacts.</p>
Contact Import from SIM	<p>The user can import contacts from the SIM card. In the case of a dual SIM phone, the contacts from the SIM in the primary slot will be imported regardless of which SIM is set to primary.</p>

Feature	Description
Kanji name support	Provides fields for the definition and display of phonetic spelling of Kanji first and family names

Calendar

The Calendar app offers users the ability to sync their personal and work calendars with their Firefox OS phone. Calendar supports CalDAV and some of the most popular hosted calendar services.

Feature	Description
View by Time Period	The user can select a time period to view the calendar by: day, week, month, or today. Calendar events are shown by time according to the current time zone.
View Calendar by Month	Month's calendar highlighting today and selected day with busy bars. Preview of selected day's entries shown below calendar. Can navigate to future or past months.
View Calendar by Day	A time grid for the day that shows each event. An event can be opened for details.
View Calendar by Week	A day/week time grid (with Sat/Sun show/not shown). Filled and empty slots are shown.
Add/Modify an Event	The users can add an event or modify an existing event in their calendar. This would include the time block (or all day), the name, the location, notes, and reminder.
Separate detail and edit views	The user can view separate detail and edit views of calendar.
Works with other services and offline (Sync)	The user can access calendars from online services (such as Gmail, Yahoo!, or those supporting CalDAV) and synchronize those calendars for offline use.
Sync Calendars	The user is shown a progress status as their calendar is syncing. When there are issues, the user is alerted.
Customize Sync Settings	The user can customize when and how often a calendar syncs.
Delete Calendar	The user can delete a calendar.
Unified or Separate Calendars	The user can view calendars individual or in a unified view of selected calendars.

Feature	Description
Delete event	The user can delete an event.
Set Alert	The user can set an alert for an event, with a reminder time.
View Conflicting Events	The user can view conflicting events in their calendar and reschedule appointments as needed.
Settings — Accounts	The user can add/delete/modify calendar accounts and set up by Gmail, Yahoo!, CalDAV, and offline. Account have to be verified. The user can set default account and those they wish to include in the calendar views.
Settings — Personalization	The user can set how often the calendar syncs, default time zone, and default calendar.

Messages App

The Messages app offers users the ability to send and receive SMS and MMS messages. The app received a visual refresh as part of Firefox OS 2.0.

Common Features

Feature	Description
Dual SIM support	In devices with Dual SIM support: <ul style="list-style-type: none"> • Tapping Send sends the message using the default SIM. • A long press on Send provides the option to select the SIM card the message is send with. • Message notification indicates SIM used.

SMS

Feature	Description
Launch	The user will see the message that was tapped in an alert or last view when opening the application.
View sent and received messages	The user can view a list of messages, or launch into a thread that displays all messages to/from a certain contact.
Concatenated SMS messages	Concatenated SMS messages are displayed as a single message. Partially received concatenated messages are displayed.

Feature	Description
Create new message	The user can create a new message from the messages home screen and enter contact phone number manually or using the contact list. As a recipient's phone number is entered, completion suggestions are provided from Contacts and unsaved message and call log contacts.
Delete Messages	The user can delete a message, a message thread, or all messages.
Add to Contact List	The user can create a contact from the phone number of a message or open an existing contact and add information.
View list of conversations	The user can view a list of all current conversations.
Manage conversations	The user can edit or delete in progress conversations.
Search for Message	The user can search messages from the sender list and find list of messages by thread.
Responding to a Message	The user can either call or text in response to a message.
Send message to multiple recipients	The user can send messages to multiple recipients.
Phone invocation from message	The user can initiate a phone call from an SMS messages.
Add phone number or e-mail contact from message	The user can create a contact (phone or e-mail contact) from the sender's details in a message.
Email invocation from message	The user can initiate Email from SMS messages.
Browser invocation from message	The user can initiate web browser from SMS messages.
Support sending retry	Upon sending an SMS message, system automatically attempts re-sending until message is delivered.
Silent SMS	A payment provider can send a silent SMS to verify the identity of a phone during the purchase process.
Save draft	Draft messages can be saved.
Forward messages	SMS messages can be forwarded.
Delivery reports	The user may request and will received (when supported by operator) delivery reports. Includes dual SIM support.

Feature	Description
CDMA support	Provides for Shift-JIS decoding of message body.

MMS

Feature	Description
New message notification	The user can enable or disable new message notifications.
Create new message	As a recipient's phone number is entered, completion suggestions are provided from Contacts and unsaved message and call log contacts. Messages may be addressed to a recipient's phone number or email.
Message details	Message details displayed to the user include: Subject
User agent profile support	The user Agent is sent to indicate the services supported by the device.
Operator-defined limit prompt	The user is informed of operator-defined limits on MMS messages.
Audio playback from message	The users can playback audio from MMS message.
Video playback from message	The users can playback video from MMS message.
Photo display from message	The user can display photo from MMS message.
Messages not downloaded	The user can manage messages that have not been downloaded in thread view.
Message preview including size	The user can preview messages and message size.
Attachment (pre-send) options	The user can take advantage of a multitude of attachment (pre-send) options.
Image attachment support	The user can leverage support for image attachment.
Message thread view	The user can view messages in a thread view, including: <ul style="list-style-type: none"> Message Subject.
Sharing from media applications using MMS	The user can use MMS messages to share content from built-in media applications.

Feature	Description
Display attachment icon in thread	The user can view attachment icon in a thread.
Ability to save MMS content	The user can save MMS content.
Image rescaling to 300kB	The user can manually rescale MMS messages to 300kb.
MMS download options	The user can set MMS download options.
New message notification when auto-download enabled	The user receives new message notification when auto-download is enabled.
Multiple recipient messaging	The user can receive messages from multiple recipients.
Video attachment support	The user can attach videos to their message.
Message thread deletion	The user can delete: <ul style="list-style-type: none"> • An individual message thread. • All message threads,
Audio attachment support	The user can attach audio files to their message.
Sent message time stamped	MMS messages are stamped with the device's time as they are sent.
Automatic download retry on failure	When the user experiences MMS download failure, download retry is enabled automatically and will retry until successful.
Phone invocation from message	The user can dial a number embedded in the MMS message text.
Add contact from message	User can create a new contact using the message sender's email address or phone number.
Email invocation from message	The user can create an email from an email address embedded in the MMS message text.
Browser invocation from message	The user can open a web page from a URL embedded in the MMS message text
Support sending retry	Upon sending an MMS message, system automatically attempts re-sending until message is delivered.
MMS Subject	The user can assign a subject to MMS messages
Forward MMS	MMS messages can be forwarded
Save draft	Draft messages can be saved

Feature	Description
Delivery reports	The user may request and will received (when supported by operator) delivery reports. Includes dual SIM support.

Email

The Email application offers access to the user's favorite email services while maintaining a desktop client-like experience. Currently the Email application supports IMAP and ActiveSync.

Feature	Description
Check Emails	The system will check for new emails automatically.
Notified	The user is notified of new emails, notifications are grouped and tapping on the notification launches the email application. Notifications are cleared once the inbox is opened.
Compose	The user can compose a new email.
Email Share Activity	The user can use another application (such as Contacts) to start email with a field pre-filled (such as address, subject).
Works with other services	The users can get/send email from: Outlook.com (Hotmail), Yahoo! Mail, Gmail, Microsoft Exchange, and IMAP and POP3 servers.
Easy Online Services Setup	The user can setup email services from supported online providers easily by entering name and password for their account.
Manual email setup	The user can setup an email account for POP3, IMAP (default to IMAP), and Exchange with ActiveSync (auto detection of folders).
Preview Email	The user looking at a message list is able to read the beginning of the subject line and body of an email for every message with a truncated view. This enables the user to quickly determine what each message is about, without opening up the full message.
View Email	The user can tap to open and view an email message.
Mark Read/Unread/Flag	The user can mark a message read or unread. Emails can also be marked with a Flag.

Feature	Description
Respond to email	The user can reply and forward a received email message.
Unified or Separate Inbox	The user can look at separate email folders or a unified inbox.
Copy original text in reply/forward	The user can reply, reply all, or forward an email and have the original text copied (if they want it copied).
Addresses	The user can address an email with To, CC, and BCC. These addresses can be manually entered or selected from Contacts.
Send Email	The user can send an email: <ul style="list-style-type: none"> • Default to: email service in reply to, forwarded • Default to preferred service for new message. • Select another account.
Delete Email	The user can delete an email.
Save Email	The user can leave an email in the inbox or move it to a folder.
Multi-Select and Action	The user has the ability to select multiple emails and perform an action on them, such as delete, flag, and move.
Set Limits on download	The user can set the maximum size of a downloaded email message (<250kb). Once set emails are downloaded to this limit. For any resulting partial message the user will be asked if they want to fetch the rest of the mail.
Zoom an Email	The user can zoom in on an email message.
Manage attachments	The user can attach or remove attachment while composing a message.
Attachment notification	The user is notified with a paperclip icon if an email has one or more attachments.
Folders	The user can set up and view emails in a folder and do all the same things as inbox messages.
Email Text Format	The user can view emails that are in HTML and rich text format. Plain text messages will default to the default system font.
Search	The user can search emails in a folder and inbox by To, From, Subject, and All fields.

Feature	Description
Search Folders	The user can search local folders, including subfolders, sent, and deleted.
Settings	The user can set preferences to govern: <ul style="list-style-type: none"> • How often to check for emails. • How many messages to store on the device (sync limits). • Whether to show images.
Attachment Saving	The user can save supported attachments (that have a built-in viewer).
Support for audio and video attachments	The user can download and view audio and video attachments from email. This uses the default audio or video player.
View PDF	The user can view a PDF attachment by clicking on attachment to launch viewer.

HERE Maps

HERE Maps provides Map, Satellite, Public Transport and Live Traffic views.

Feature	Description
Launch	The user is asked to provide location access when the app is launched. If user agrees, HERE Maps indicates specific location on map using GPS.
Manipulate map using touchscreen	The user can navigate a map in any direction using the touchscreen.
Map zoom	The user can zoom in or out on a map.
Return back to GPS location	The user can manually reset the map display to the GPS location.
Set map view	The user can set view to map, satellite, public transport, or live traffic.
Community view	The user can set community map view, which is updated with contributions about traffic and incidents from all over the world.
Traffic settings	The user can set traffic to on or off, and enable or disable receipt of information on accidents, construction, and congestion.

Feature	Description
Set language	The user can set map language to English, Spanish, Polish or Portuguese.
Set map to display miles or kilometers	The user can set map to display kilometers or miles.
Search for address or place on map	The user can search for address or place on the map and view address, location, and contact details.
Address and location options	The user can call, share, route to, view website of and set locations as favorites. The user can also view nearby places to eat, shop, go out, see sights, and public transportation options.
Map options	The user can sign-in, search for location, route to location, save favorites, send feedback, and get information.
Directions	The user can use "route" to feature to navigate to specific address.
Navigate back to map home	The user can navigate back to map home with back button in the map app.

Photo Gallery / Gallery

The Gallery app is the central location in which users store photos that they've taken with the device's camera or accessed from their SD card.

Feature	Description
View Thumbnails and open.	The user has the ability to swipe through the thumbnail view of photos and open a photo for larger view.
View Photo	The user can view large photos and swipe to go to next. The user can zoom and pan on photo.
Swipe to navigate gallery	The user can swipe left and right to scroll through photos in Gallery.
Delete Photo	The user can select and delete one or more photos from thumbnail, or the photo from the single view.
Use SD Card	The user can view photos from internal memory or from an SD-Card.
Share Photo	The user can share photos (up to 5) using email, MMS,

	Bluetooth and social networks. The selection can be extended.
Set Wallpaper or contact photo	The user can use photo for wallpaper or with a contact profile.
Use orientation data when viewing	The user will see the proper orientation (portrait or landscape) when viewing the photo.
Copy photos	The user can copy a photo to their desktop computer when attached.
Edit Photo and Apply Filters	The user can edit and apply filters. This includes exposure compensation, basic cropping, basic effects (B&W, sepia), basic borders (B&W thin and thick).
Content Arrangement by month	The content in the gallery is arranged based on month.
Display File Information	File information is available to the user in the gallery application including type, size, resolution, and creation date.

Browser

The Firefox OS Browser enables users to access and browse websites.

Feature	Description
Address Bar/Search	The user can use the address bar to navigate to a website using a URL OR search. The search engine is customizable.
Page match suggestion	The user is provided with page match suggestions based on partial URL entries and search history.
Hit "Enter" button to trigger search	The user can tap the "Enter" button on the keyboard to action the URL or Search term entered into the address bar.
URL Reveal	The user can tap a page's title in the Address Bar and URL of the page will be revealed.
Awesome Screen	The user can tap the address bar to reveal Top Sites, Bookmarks and History.
Organized History	The user can view search history in distinct sections: Today, Yesterday, Last 7 Days, This month, Older than 6 months, and so on.

Feature	Description
Navigation	The user can navigate using the address bar, forward button, back button, history, and favorites.
Reload/Stop Load	The user can manually reload a website and stop the load of a website.
Manage Tabs List	The user can access, edit, delete, or navigate to websites from the tabs in the Tabs List.
Direct interaction with web-content through shells	The user can open web content that is saved to the home screen in an optimized shell; enabling them to interact with web content directly, uncontained by the Browser.
Bookmark or add sites to home screen	The user can bookmark a site and save it to their home screen. The user can edit/delete bookmarks, including the label.
Individual tabs for each site visited	The user can have multiple browsers sessions in separate tabs that can be navigated to by clicking on the tab. The user can create a new tab easily.
Page content loading indicator	An indicator at the top of the browser informs the user when page content is loading.
Page refreshing	The user can refresh page contents to check for new content or clear up a problem from a page that has not fully loaded.
Page error message	The user is informed by page error message when problems loading a page arise.
Home Screen Shortcut	Sites bookmarked to the Home Screen will show an icon that, when launched, will open to the bookmark.
Settings	The user can manage browser settings: <ul style="list-style-type: none"> • Clear history. • Clear Cookies and data.
Password	The user can automatically fill in passwords for a given websites. The browser will prompt for saving and filing passwords.
Indicators	The user will receive visual indicators of: <ul style="list-style-type: none"> • Page load. • Network access not available. • Encryption of website (lock).
Document Types	The user can view certain document types, such as PDF.

Feature	Description
Gesture support	<p>The user can zoom in and out on any object/section of a web page (exception may be mobile-optimized sites).</p> <ul style="list-style-type: none"> • Text box/image/section: double-tap. • General Area: pinch to zoom. • Hide reveal tabs using gesture. • Pan zoomed areas.
Web content accessible through Task Manager	<p>From the Task Manager the user can access each active instance of web content in dedicated shells via</p>
HTTP Authentication	<p>When they visit a web page, the user enjoys the protection provided by HTTP authentication.</p>
Maximization of screen real estate	<p>The user enjoys a viewing experience that maximizes use of screen real estate within the browser.</p>
Image save from web page	<p>The user can save an image from web pages that they are visiting.</p>
Video save from web page	<p>The user can save a video from web pages that they are visiting.</p>
URL Sharing via Web Activity	<p>The user can share the URL of the current webpage to other applications that are registered to handle the URL Web Activity.</p>

Marketplace

The Marketplace app offers a central location for curated Web Apps content across the Internet. The Mozilla Marketplace is the best place to discover and download innovative HTML5 applications for Firefox OS.

Feature	Description
Launch	The user is brought to App Marketplace Home Page upon launch.
App Marketplace Home Page	View and scroll through the Featured and Popular apps.
Select App Category	The user can select an app category and the marketplace will display featured and popular apps from that particular genre.
Search for App	The user can use natural language search bar in the app marketplace to search for relevant applications.
Use App before downloading	The user can use web app on the web before downloading it to home page.
Download App	The user can download app to home page for easy access and use.
Update App	The user can update app manually or set updates to run automatically.
Delete App	The user can delete app from home page with long press and tap to remove permanently.
Settings	The user can set region, view installed apps, send feedback, view privacy policy, view terms of use and request help. Note: user must be signed-in to take advantage of these features.

Camera

The Camera app is part of the core set of apps on Firefox OS. It offers users the ability to capture still images, video and access the Photo Gallery.

Feature	Description
Launch	The user is immediately brought to the preview and shoot position when Camera app is launched.
Set Location	When the user launches the Camera app a request to set the location is displayed to the user. The user has the option to deny or approve the location setting.
Battery status	The battery status is displayed in the viewfinder for photo and video capture.
Toggle between camera and video	The user can toggle between camera and video capture modes.
Set image resolution (Settings)	User can set the images resolution to 8MP, 5MP, 3MP or 1MP (depending on camera hardware resolution).
Zoom before capture	The user can zoom the image to be captured, either using pinch to zoom or a slider.
White balance (Settings)	White balance is set to automatic by default and the user can adjust prior to taking a photo (if supported in camera hardware).
HDR (Settings)	The user can set HDR to on, off, or automatic (where supported by hardware).
ISO (Settings)	The ISO setting defaults to automatic. The user can set the ISO for image capture in Settings. (Where supported by hardware.)
Self-timer (Settings)	The user can set a self-timer to off, 2 sec, or 10 sec.
Grid (Settings)	The user can choose to have a grid displayed over the photo capture preview.
Take a photo	The user can view a preview and snap a photo from the preview and shoot screen. A grid overlay is provided depending on camera settings.
Touch Focus	The user can tap a position on the screen to indicate where

	they would like the camera to focus. Viewfinder provides visual confirmation that focus was obtained.
Face Tracking	Detects faces and automatically focuses on them (where supported by hardware). Where Face Detection fails to find faces in the picture, focusing defaults to continuous Autofocus.
Continuous Autofocus	The camera supports continuous autofocus (if supported in hardware). Viewfinder indicators show whether the camera has obtained focus or is in the process of focusing.
Post-photo preview	A brief preview is shown to the user after a photo is taken. The preview can be tapped to bring the image up in the full screen.
View photo in landscape or portrait mode	The user can rotate phone to view a photo in landscape or portrait.
Shutter Sound (Settings)	The user can set the shutter sound to on and off (using Settings).
Photo/Video saved to Gallery	The user can store the photo in the Gallery, and video in the Video area for playback by the Video app.
Used from other Apps	The user can launch the camera from other apps, if permission is set.
Can Act on Photo (share, send)	The user can act on the photo taken: send email, send MMS message, assign to contact or use as wallpaper.
Select which camera	The user can toggle between front and rear facing cameras.
Flash	The user can set flash to be on, off, or automatic.
Space warning	The user is notified, with a space availability warning, when storage is running low.
Capture a Video	The user can capture a video in H.264 video format and AAC audio format.
Set video resolution (Settings)	The user can set the video capture resolution to HD (1280x720), QCGA (320x240), or QCIF (176x144).
Apply Filters	The user can apply filters after photo is taken, such as crop.
Save meta information	When saved, the photo will be saved with meta information such as geo-tag, photo orientation (portrait/landscape), time, and date.

Autofocus	The users can autofocus on a detected subject.
Continuous Autofocus	The camera supports continuous autofocus (if supported in hardware).
Store Photos on SD Card	The user can store photos to an SD Card.
Store Photos or Video on PC/MAC	The user can access photos and recorded videos by enabling USB Mass Storage mode, so that media can be saved/archived to PC.
Thumbnail Creation	A thumbnail is created for apps in the gallery and can be previewed after the photo is taken.
Flash Support	Flash can be used while taking a picture (if supported on hardware).

Clock/Alarm

The Clock application offers helps the user keep track of time: a traditional alarm clock.

Feature	Description
Launch	The user is able to view analog or digital clock after app is launched.
View time	The user can view the time on the clock.
Set alarm	The user can set alarm, label it, choose repeat settings, sound type, and snooze settings. Scheduled alarms are viewable from the clock home.
Edit alarm settings	The user can edit alarm settings.
Selected audible tone and/or vibration	The user can select audible tone and/or vibration for alarm clock.
Snooze	The user can tap the snooze button to enable snooze and temporarily dismiss an alarm.

FM Radio

FM Radio application utilizes the hardware component on the device to receive traditional FM signals. The user can listen to their favorite radio stations from their Firefox OS device.

Feature	Description
Launch	When the user taps to open, Radio app launches. If headphones are plugged in they are taken to digital radio dialer and audio begins playing immediately.
Manual tuning	The user can tune to a radio station by swiping the manual tuner left or right.
Select a Favorite	The user can select a station from favorites list/preset.
Add to Favorite	The user can add a current station to their favorites list (along with the call sign).
Adjust volume	The user can adjust the volume using the volume rocker offered on the phone, regardless of the currently active app.
Stop/Mute player	The user can mute the radio by tapping the stop button.
Missing Antenna	The user is notified if the headset is not plugged in, and the radio will not play.
Background Radio playback	The user can navigate to and use other apps while listening to the radio.
Speaker out	The user can select to use the device speaker as the output method, even when headphones are connected.

Music Player

The Music app offers the users the ability to listen to music content they have on the device or the SD card.

Feature	Description
Music Library	The user can play audio from a Playlist, Podcast, Audiobook, or just an individual song.
Music Filters	The user can filter, search, and sort based on artist, song, album, or genre.

Feature	Description
Layout	The user can sort listed items typographically or pictorially (album art with text).
Manual Playlist	The user can import a playlist from popular desktop apps or create/delete a playlist on the device.
Auto-Generated Playlist	The user can play auto-generated playlists that are developed based on usage patterns of all users who have the music app (Highest Rated, Recently Added, Most Played, or Least Played).
Artwork during playback	During playback, the user can view included album artwork or auto-generated artwork when album artwork is not available.
Notifications during playback	The user can receive calls and message notifications during audio playback.
Loading Music	Music can be dragged and dropped from a PC to the Music folder in Internal memory or SD-Card.
Playback Controls	The user can use the following controls: <ul style="list-style-type: none"> • Play/Pause • Skip to Next track • Skip to Previous track • Scrubber (shuffle to any point in the track, scrubber updates location with playback) • Repeat Infinitely • Repeat Once • Shuffle playback Playlist • Volume Control (adjusted by touch and hardware volume rocker)
Codecs	The user can play audio files in MP3 (*.mp3), AAC (*.m4a, *.m4b, *.m4p, *.m4r, *.3gp, *.mp4), AMR (*.amr), Vorbis (*.oga, *.ogg), Opus (*.opus), and WAV (*.wav).
Browsing	Browsing lists will allow: <ul style="list-style-type: none"> • Search, index list sorted by a component with jump to a letter • Back.
Music Management	The user can do the following: <ul style="list-style-type: none"> • Create/delete/modify a playlist with music tracks. • Organize tracks in a playlist. • Rate music.

Feature	Description
Indicators	The user can see playback time elapsed, playback time remaining, song name, artist, album, and album art or default graphic during playback.
Indicators on Home Screen	An icon is shown on the status bar while music is playing.
Music search string highlight	When the user searches for a term, if present, the term searched for is highlighted.
Album Track List	The user can view the track list for an album.
Access to music controls in notification tray	The user can access and utilize the media controls (stop, play, next/previous, etc.) from the notification tray.
Access to music controls while locked	The user can access and utilize the media controls (stop, play, next/previous, etc.) from the lock screen while the phone is locked.

Video Player

The Video app offers content playback support and the ability to manage all video files on your device. Gaia will support popular file/compression formats, including H.264/VP8 for video and MP3/AAC/Vorbis for audio.

Feature	Description
Load Videos from computer	The user can load a video onto the phone by plugging into a computer and dragging and dropping files onto the device (that shows as a portable storage device), or adding files to an SD Card in a folder called "Videos".
Load videos from network	The user can download or stream a video from a website and play saved video.
Browse and launch video	The user can browse videos on internal or SD Card: <ul style="list-style-type: none"> • Lists videos alphabetically. • Shows video thumbnail (taken from a frame a few seconds into the video). • Shows video file name. • Shows video duration. • Shows time left (if video has been stopped part way through playback). • Shows artist information (from metadata).
View videos in Landscape or	The user can view a video in landscape and portrait mode

Feature	Description
Portrait	depending on the device orientation.
Launch or Resume	The user can launch a video from the beginning or resume from last viewed position (as set by pause, stop, or exit app).
Playback Controls	The user can play, pause, seek forward (5x, or 5min intervals depending on video performance), seek backwards, stop/back (and go back to video list), scrubber (video playback location to time elapsed/time remaining location).
Codecs	The user will be able to play a video encoded with H264 / MP4 (*.mp4, *.m4v), MPEG-1 (*.mpeg, *.mpg), Ogg (*.ogg, *.ogv, *.ogx), 3GP (*.3gp), or VP8 (*.webm).
View Video Information	The user can see the file type, size, resolution, date of creation, and resolution for video stored in the video application.

Help App

The Help app redirects users to mobile web help sites for carrier managed support and Frequently Asked Questions (FAQs).

Feature	Description
Carrier support	The user can request and receive assistance with their mobile device.
FAQs	The user can visit the FAQs page to find answers to their questions quickly.

Settings

There are many user configurable settings on Firefox OS. These enables the user to personalize their Firefox OS device and ensure that it operates in the way they want it to. While Settings is a system application, it's called out separately in this document due to its unique functionality. This section of the document details several of the key pieces of functionality that makes up Settings on Firefox OS.

For a complete list of settings and more information on the individual settings elements please visit <https://wiki.mozilla.org/Gaia/Settings>.

For settings provided by a SIM — including predictive text configurations, network display indicator, browser bookmarks, A-GPS settings, ringtone wallpaper, support contacts, and other contacts — these are set when the device is first run or each time the SIM card is swapped.

Network and Connectivity

Network and connectivity settings offer capabilities to manage Wi-Fi, Bluetooth, Cellular, and Geolocation connectivity settings.

Feature	Description
Airplane Mode	The user can toggle Airplane mode on and off. Enabling Airplane mode turns off all network access including Wi-Fi, Cellular, GPS and Bluetooth.
Geolocation	The user can turn Geolocation on and off. This controls access to location-based services.
Turn Wi-Fi on/off	The user can turn Wi-Fi on or off as needed.
Connect with WPS	The user utilize Wi-Fi Protected Services (WPS) to easily establish a secure wireless network.
Manage Wi-Fi Networks	The user can search available networks and add, delete or edit those networks.
Manage Call Settings	The user can enable or disable call waiting and call forwarding.
Cellular and Data	The user can modify cellular and data settings such as data connection, data roaming, or operator settings.
Turn Data connection on/off	The user can set applications to automatically fetch data via data connection when required.
Turn Data Roaming on/off	The user can enable or disable Data Roaming.
Manage Network Operator Settings	The user can set network type (to 2g, 3g or automatic) and network selection settings (manual or automatic)
Manage Data Settings	The user can leverage default data settings or manually specify APN, Identifier, Password, and HTTP proxy host.
Enable Bluetooth	The user can enable or disable Bluetooth.
Bluetooth Settings	The user can set device name, visibility and search nearby devices in the area.
NFC Settings	The user can enables or disable NFC.
Manage Wi-Fi hotspot (internet sharing)	The user can enable or disable, set name, security and settings of Wi-Fi hotspot.

Feature	Description
Enable USB tethering (internet sharing)	The user can enable or disable USB tethering for internet connection sharing.
Enable WAP Push	The user can enable or disable all WAP push services independent of the operator customizations.
Data access attempted while offline	<p>When access data is attempted when offline the error message:</p> <ul style="list-style-type: none"> • Is presented as a standard UI message (rather than 404 error page). • If in Airplane mode, option to turn airplane mode off is provided. • If the data connection is disabled but no Wi-Fi accessible, option to turn the data connection on is provided. • If Wi-Fi is off but no (mobile) data connection available, option to turn on Wi-Fi is provided. • When a connection to a server is unavailable over a data connection, user is provided meaningful description of server issue. • Error is hidden if data connectivity resumes.

Personalization

Personalization settings provide users with the capability to tailor their interaction with a Firefox OS device to their lifestyle and preferences.

Feature	Description
Manage Sound Settings	The user can set notification type and volume for delivered services and applications, including the ringer, alarm, ring tones, keypad, camera, and unlock screen.
Manage Wallpapers	The user can set wallpaper from Gallery or Camera.
Manage Display Settings	The user can set screen brightness and timeout.
Set notifications to on or off	The user can decide if notifications are shown on lock screen.
Set Date and Time	The user can set date and time manually or automatically.
Set Language	The user can set system language. Refer to the International & Localization Features section of this document for supported languages. The set of available languages will vary by region.

Feature	Description
Manage Keyboard Settings	The user can set keyboard sounds, word suggestions, and language layouts.
Manage Ringtones	The user is able to add additional ringtones based on downloaded audio files and tracks from their Music app's library. Added ringtones can be subsequently deleted.

Privacy and Security

Privacy and Security settings provide users with the capability to customize lock, SIM card, app permissions, and cookie tracking settings.

Feature	Description
Manage Phone Lock settings	The user can set lock screen settings and passcode.
Manage SIM security settings	The user can enable or disable SIM PIN settings for cellular network access.
SIM PIN change confirmation	The user will see a confirmation screen if they change the SIM PIN.
Set App permissions	The user can set app permissions for each app individually.
Clear Bookmarks data	The user can clear bookmarks data.
Do Not Track	The user can specify whether websites or apps can track their behavior.

Device

Device settings provide users with the ability to monitor the performance of their smartphone and adjust those settings to reach their optimal performance.

Feature	Description
View Device Information	The user can view Phone number, Model, Software version, Rights, Privacy, and Legal information.
Manage System Updates	The user can modify system update settings, automate updates, and manually download updates.
Manage Battery Settings	The user can check current battery levels, and set Power

Feature	Description
	save settings according to thresholds.
View device storage	The user can check application storage: total space on device, space used, and space left.
Check and manage media storage	The user can check media storage availability by segment (music, pictures, and videos) and enable or disable USB mass storage.
Send Feedback about Firefox OS	The user can send feedback regarding Firefox OS, including performance data, crash reports, and free form response.
Get Help	The user can reference the user guide for help.

Summary

Firefox OS is a platform built by the web, for the web. It's a new and rapidly evolving mobile operating system that aims to provide open access to the mobile web in new and innovative ways. This document provides an overview of many of the features available in version 2.0 of Firefox OS. It can be used by anyone in the Mozilla community and beyond to better understand the capabilities of the platform in this release. Firefox OS has a rapid release cycle and new versions of the software are released regularly. It's planned that a version of this document will be developed for each release.

More information on Firefox OS can always be found at:

- <https://wiki.mozilla.org/FirefoxOS>
- <https://wiki.mozilla.org/B2G>

The Firefox OS roadmap can be found at:

- <https://wiki.mozilla.org/B2G/Roadmap>