

Finding an optimal approach to document collaboration in integrated environments: interoperability, decentralization and limitations

Speaker: **Mikhail Korotaev**.

January 2022

Methods of integration of office applications in collaborative environments

Using WOPI



Using own API

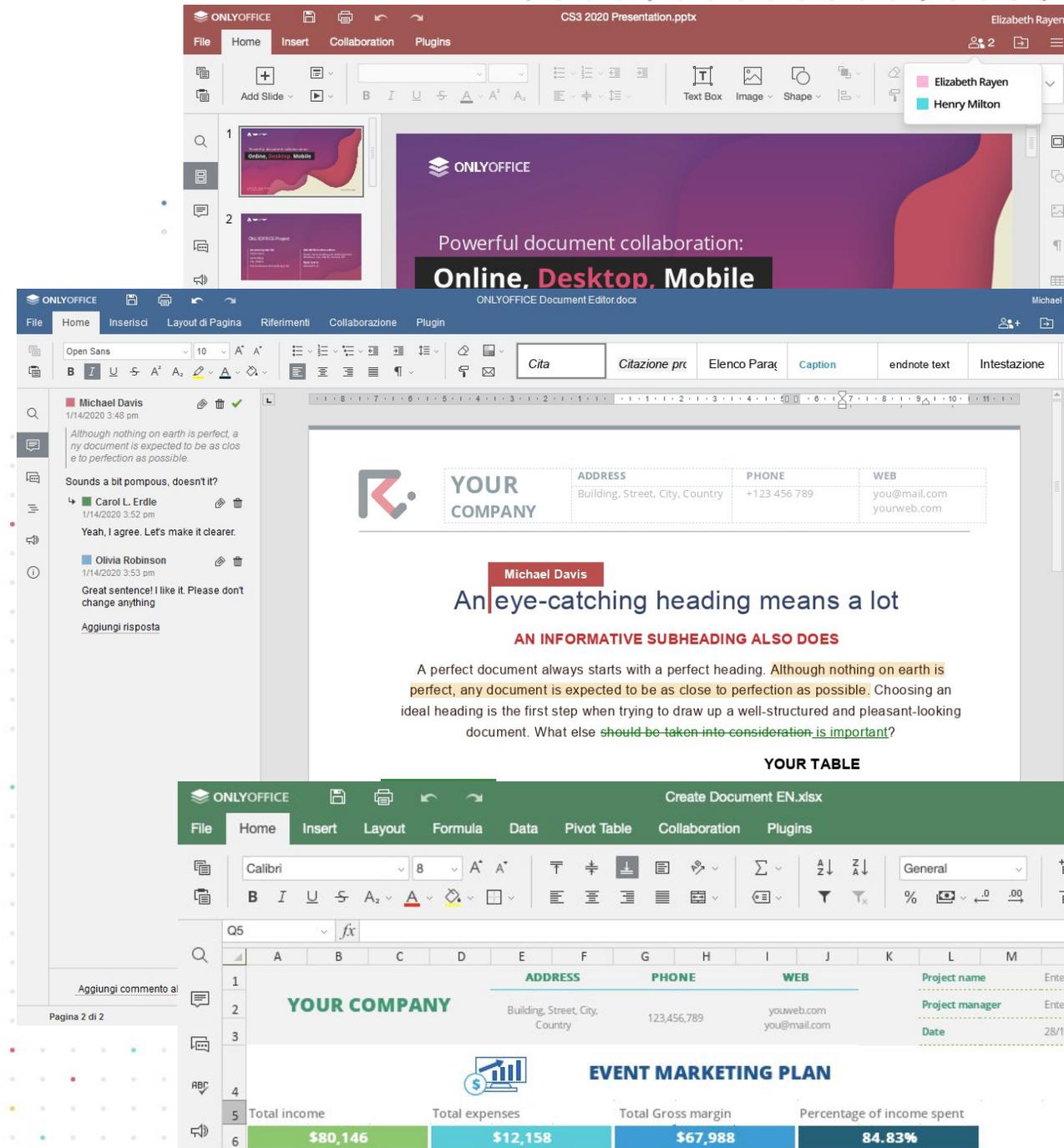


Both WOPI and API integrations



About ONLYOFFICE Docs

- ✓ Editors for documents, spreadsheets and presentations
- ✓ OOXML as core formats
- ✓ Web, desktop, and mobile apps
- ✓ Node.js for server-side code, JavaScript SDK for client-side interaction
- ✓ Available as DEB, RPM, Docker, Snap, UCS, Cloudron, AMI, Kubernetes
- ✓ Open-source



The image displays two overlapping windows of the ONLYOFFICE application. The top window shows a presentation slide titled 'Powerful document collaboration: Online, Desktop, Mobile' with the ONLYOFFICE logo. The bottom window shows a document editor with a table and a paragraph of text.

ONLYOFFICE Document Editor.docx

Comments:

- Michael Davis: 1/14/2020 3:48 pm. Although nothing on earth is perfect, any document is expected to be as close to perfection as possible.
- Carol L. Erdle: 1/14/2020 3:52 pm. Sounds a bit pompous, doesn't it?
- Olivia Robinson: 1/14/2020 3:53 pm. Yeah, I agree. Let's make it clearer. Great sentence! I like it. Please don't change anything.

YOUR COMPANY

ADDRESS	PHONE	WEB
Building, Street, City, Country	+123 456 789	you@mail.com yourweb.com

Michael Davis

An eye-catching heading means a lot

AN INFORMATIVE SUBHEADING ALSO DOES

A perfect document always starts with a perfect heading. Although nothing on earth is perfect, any document is expected to be as close to perfection as possible. Choosing an ideal heading is the first step when trying to draw up a well-structured and pleasant-looking document. What else should be taken into consideration is important?

YOUR TABLE

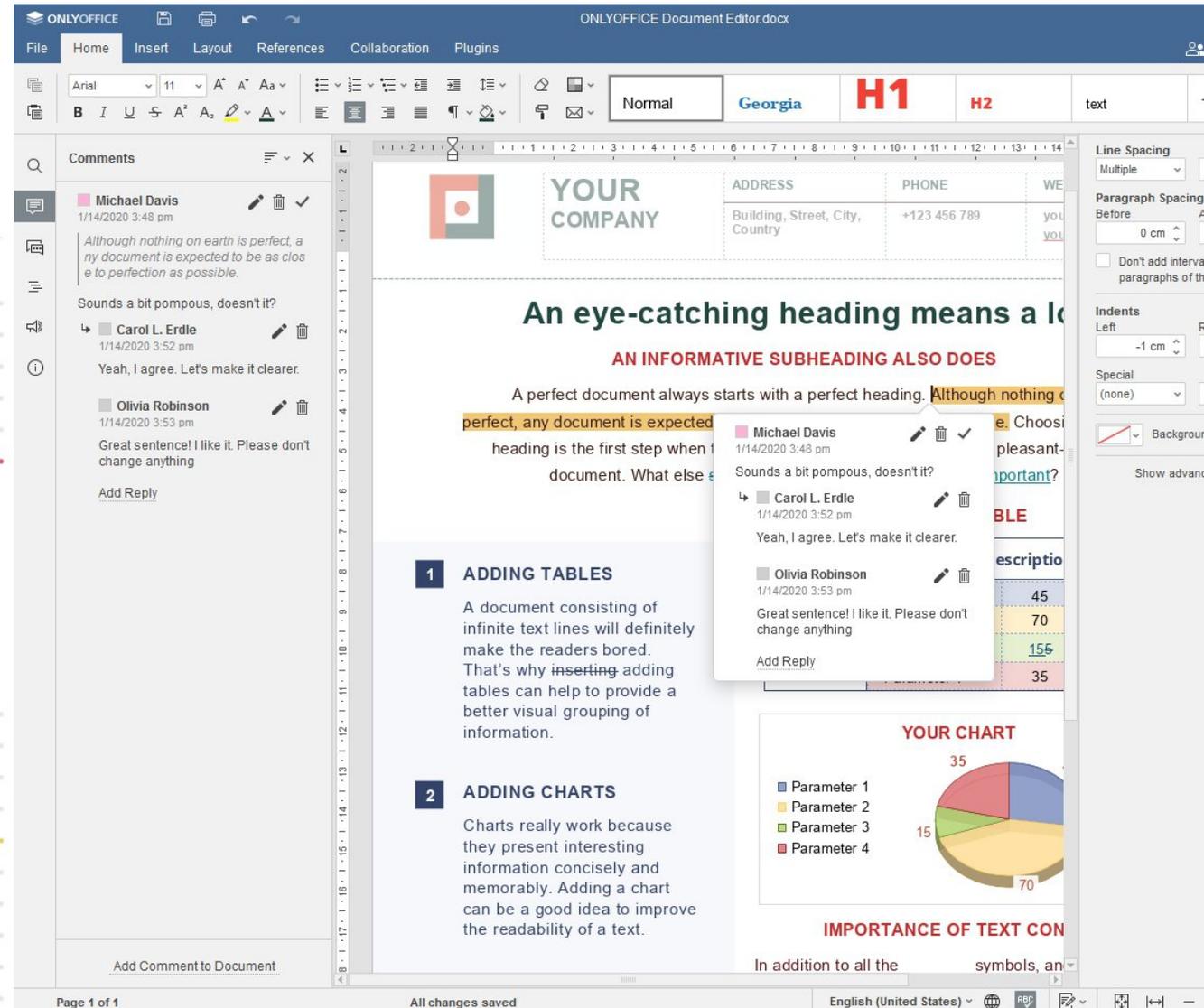
ADDRESS	PHONE	WEB	Project name
Building, Street, City, Country	123,456,789	youweb.com you@mail.com	Enter...

EVENT MARKETING PLAN

Total income	Total expenses	Total Gross margin	Percentage of income spent
\$80,146	\$12,158	\$67,988	84.83%

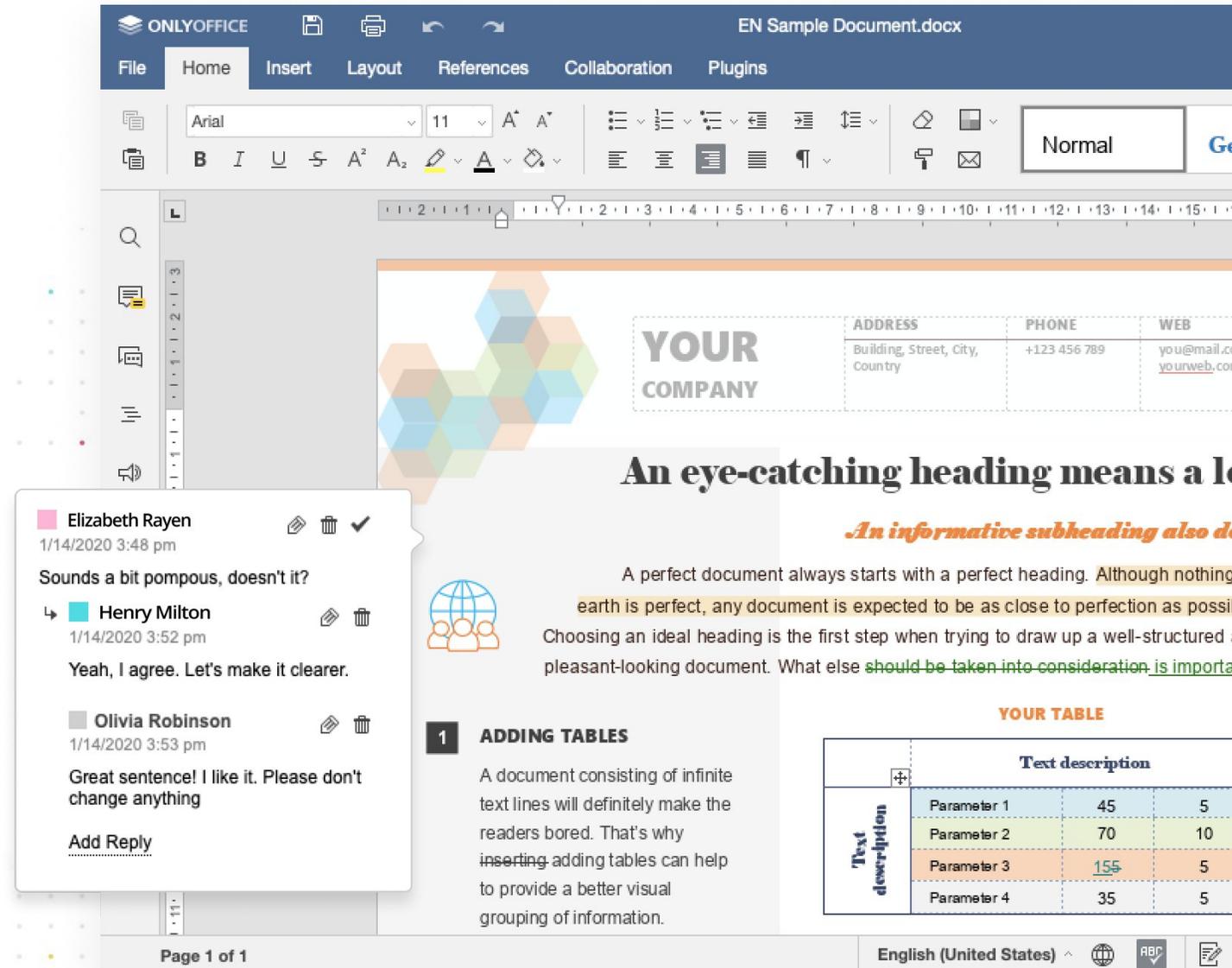
Professional editing tools

- ✓ **Full set of editing and formatting tools:** all operations with fonts and styles, paragraph and text formatting
- ✓ **Creating and customizing all kinds of objects:** shapes, charts, tables and text boxes
- ✓ **Formatting and navigation:** footnotes, endnotes, table of contents, bookmarks
- ✓ **Content controls**
- ✓ **Collection of plugins**
- ✓ **Forms**
- ✓ **Full Dark Mode**



Collaboration features

- ✓ Flexible access rights: viewing, editing, reviewing, commenting only, field filling, custom filtering
- ✓ Strict and Fast co-editing modes
- ✓ Version and revision control
- ✓ Review mode with Track Changes
- ✓ Comments with mentions
- ✓ Built-in chat
- ✓ Document Comparison
- ✓ Sheet Views in spreadsheets



The screenshot shows the ONLYOFFICE interface for a document titled "EN Sample Document.docx". The ribbon includes File, Home, Insert, Layout, References, Collaboration, and Plugins. The document content includes a company header, a heading "An eye-catching heading means a lot", a subheading "An informative subheading also does", and a table titled "YOUR TABLE".

A comment thread is overlaid on the document:

- Elizabeth Rayen** (1/14/2020 3:48 pm): Sounds a bit pompous, doesn't it?
- Henry Milton** (1/14/2020 3:52 pm): Yeah, I agree. Let's make it clearer.
- Olivia Robinson** (1/14/2020 3:53 pm): Great sentence! I like it. Please don't change anything.

The bottom of the screen shows "Page 1 of 1" and "English (United States)".

Reinforced security

✓ Self-hosted solution

✓ Document access control:

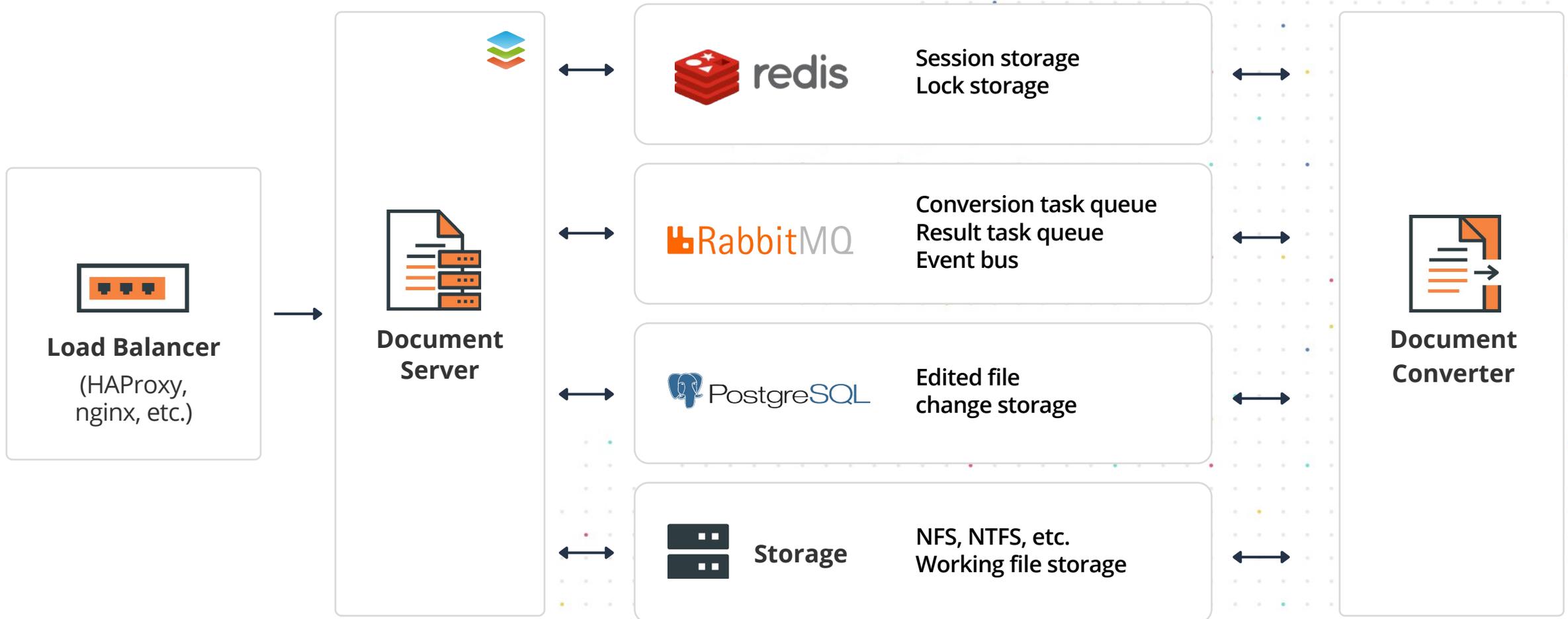
- ◆ password protection
- ◆ e-signature
- ◆ JWT protection
- ◆ flexible permissions
- ◆ watermarking
- ◆ copy/download/printing restriction

✓ Encryption:

- ◆ HTTPS data encryption in transit
- ◆ End-to-end document encryption



Architecture: document editing service structure





ONLYOFFICE Docs (Document Server)

4 core CPU

8 Gb RAM

8 Gb swap

150 Gb SSD

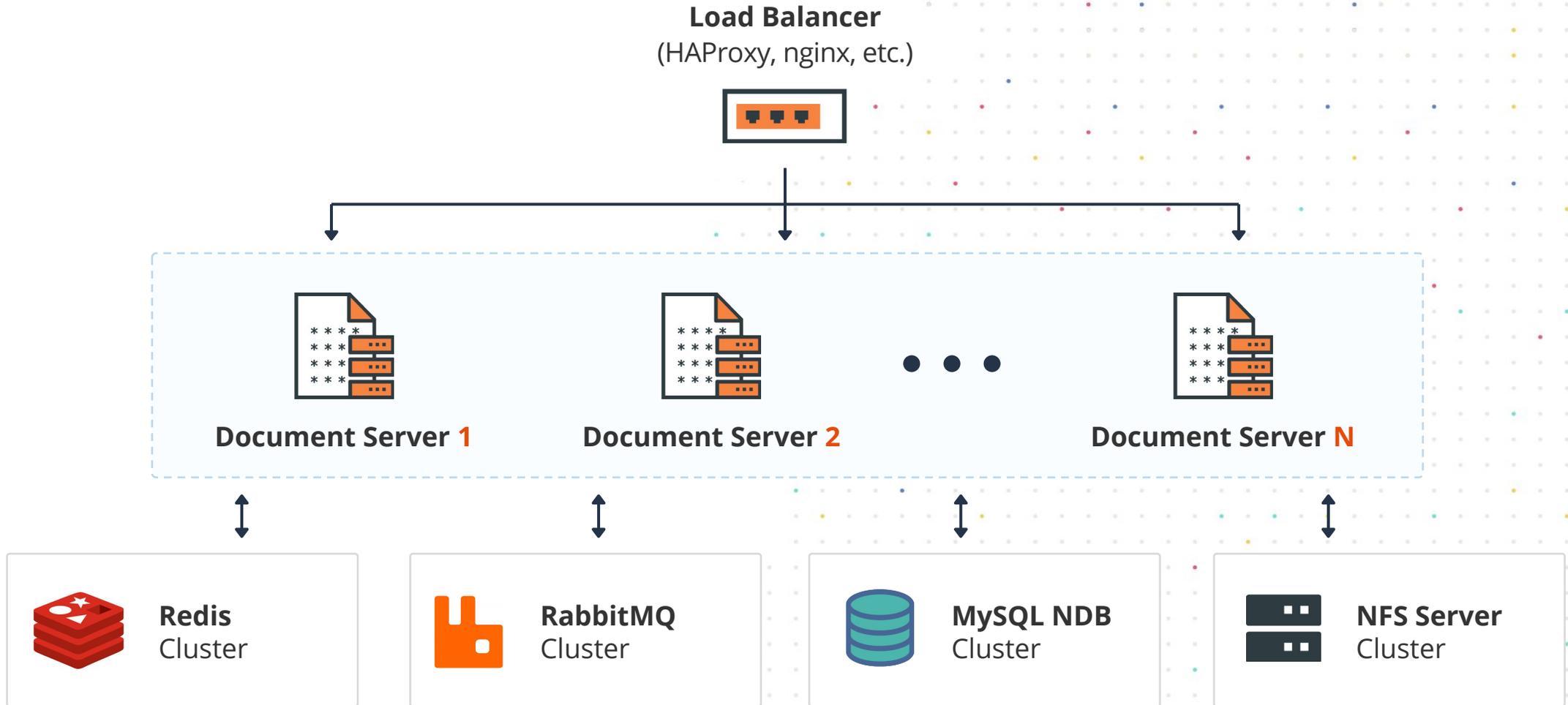
Ubuntu 20.04



1000 simultaneously edited documents

- ✓ Every 4 seconds, changes are made to all documents (250 changes per second for 1000 connections).
- ✓ Every 60 seconds, 9-10% of connections are closed and documents are sent to the server for converting and building (i.e. 90-100 closed connections). The same number of new connections are being created. **During an 1-hour-test 5931 documents were sent for converting and building.**

ONLYOFFICE Docs for a cluster

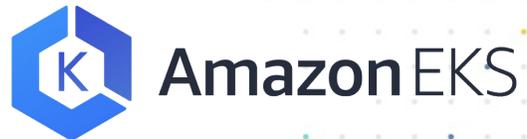


ONLYOFFICE Docs for Kubernetes

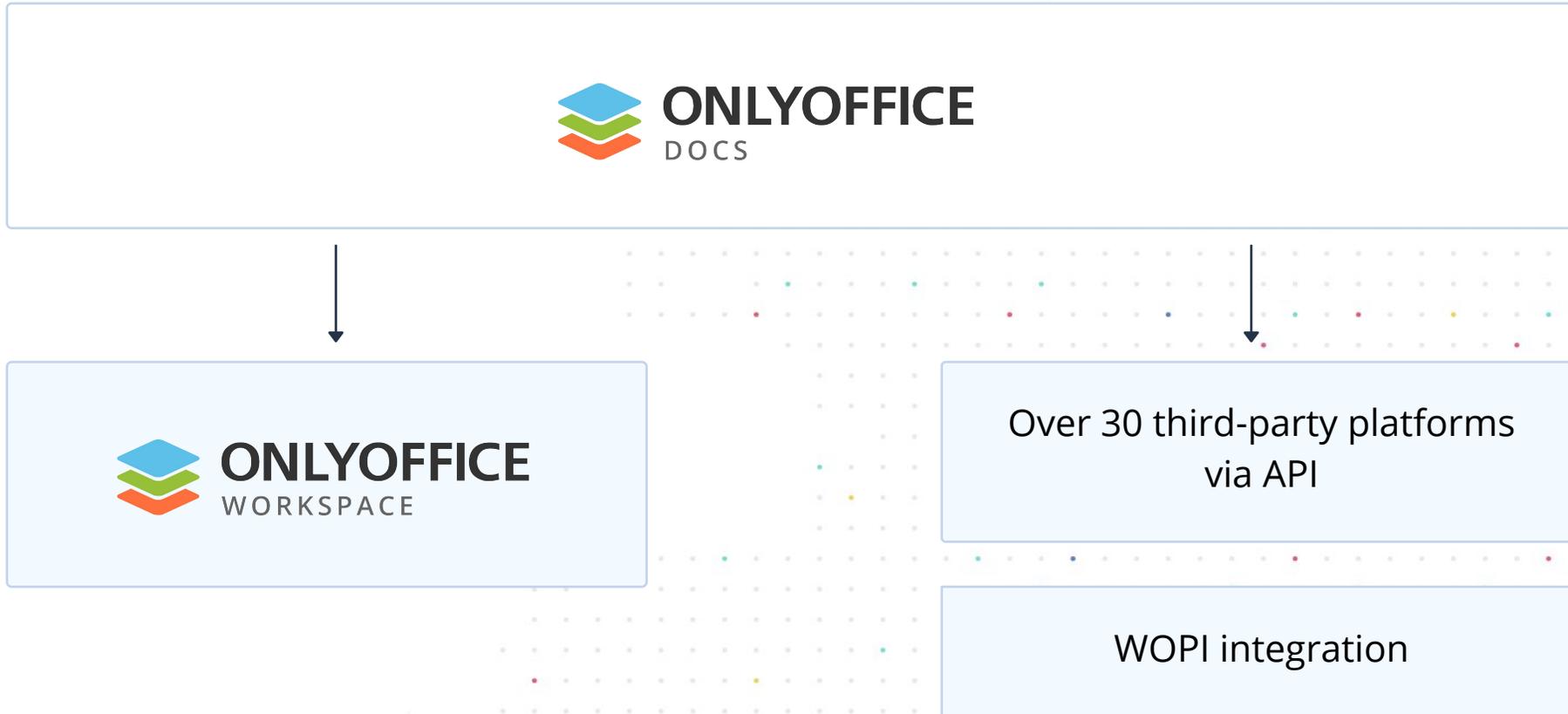
kubernetes

Run on managed services that support Kubernetes.

Tested examples:

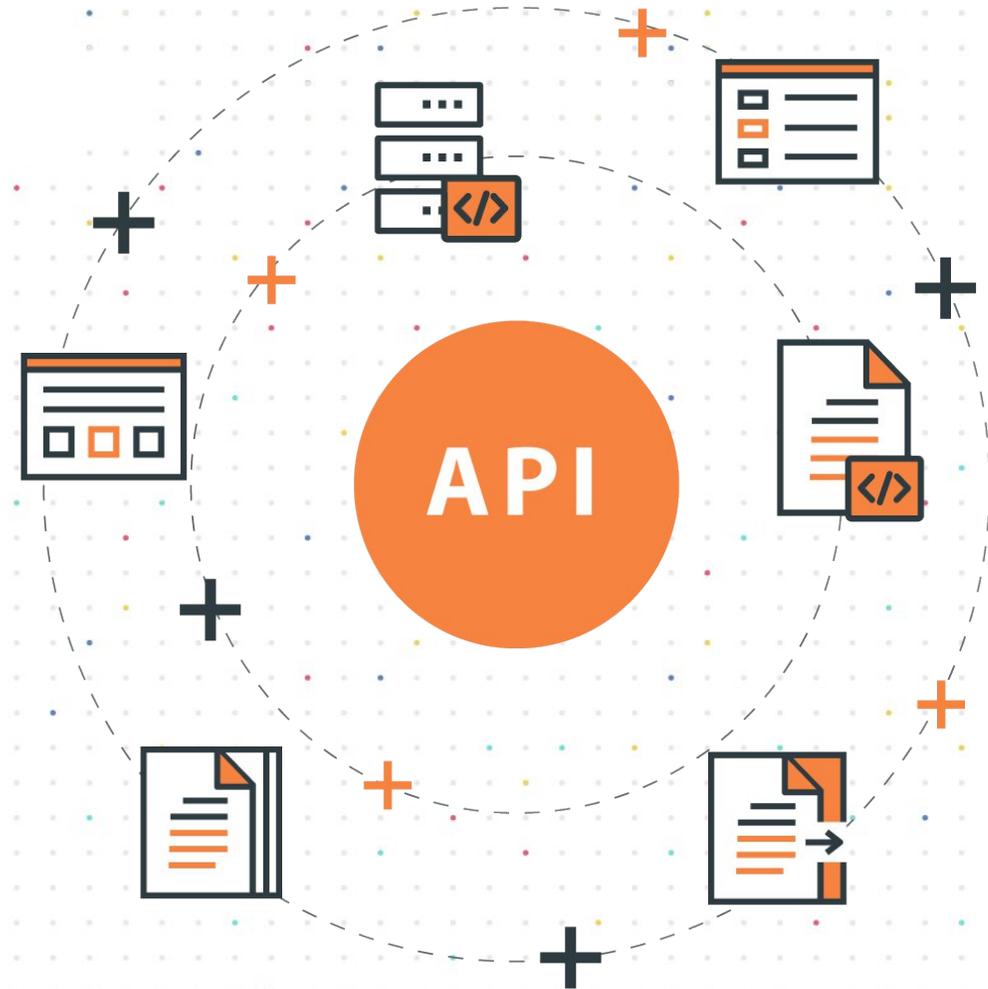


ONLYOFFICE Docs in use



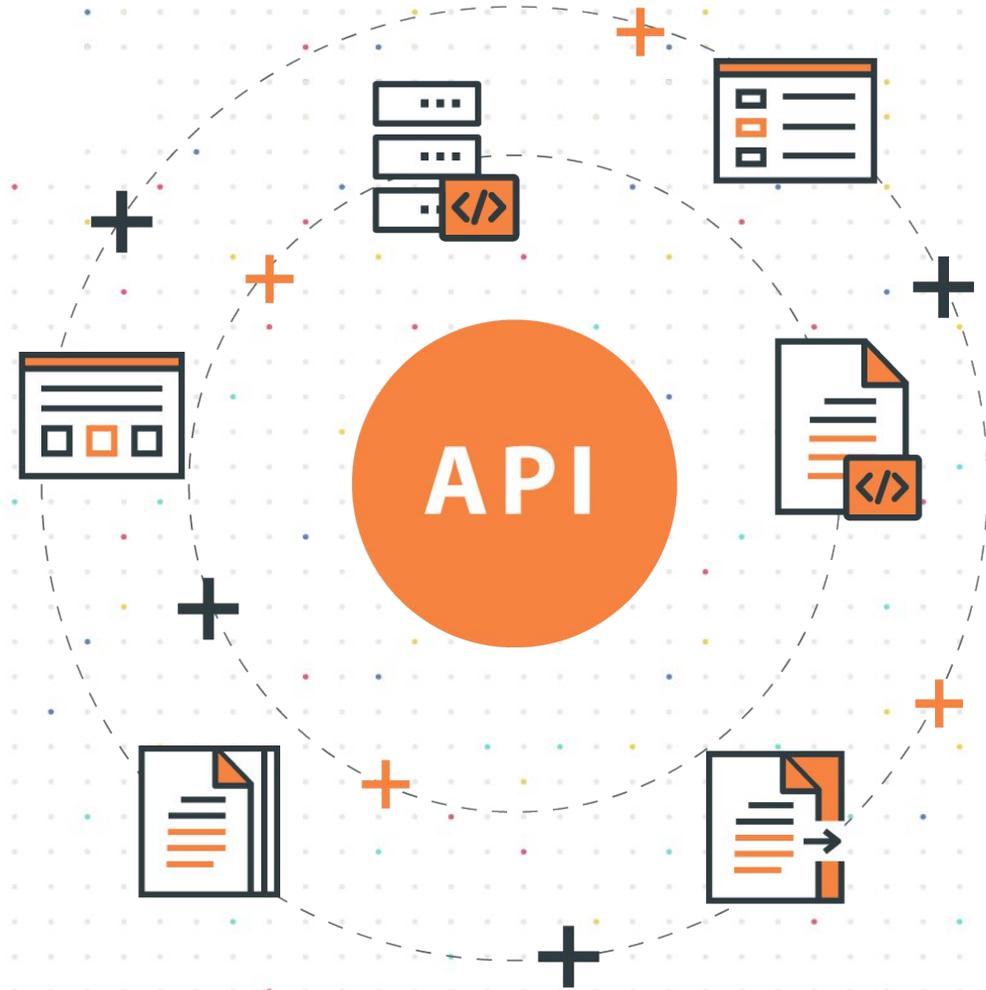
API-based integration

- ✓ Application Programming Interface
- ✓ Typically HTTP- and REST-based
- ✓ Designed to connect specific applications and has its own software development lifecycle
- ✓ Allows the client to perform a variety of operations provided in the integrated service

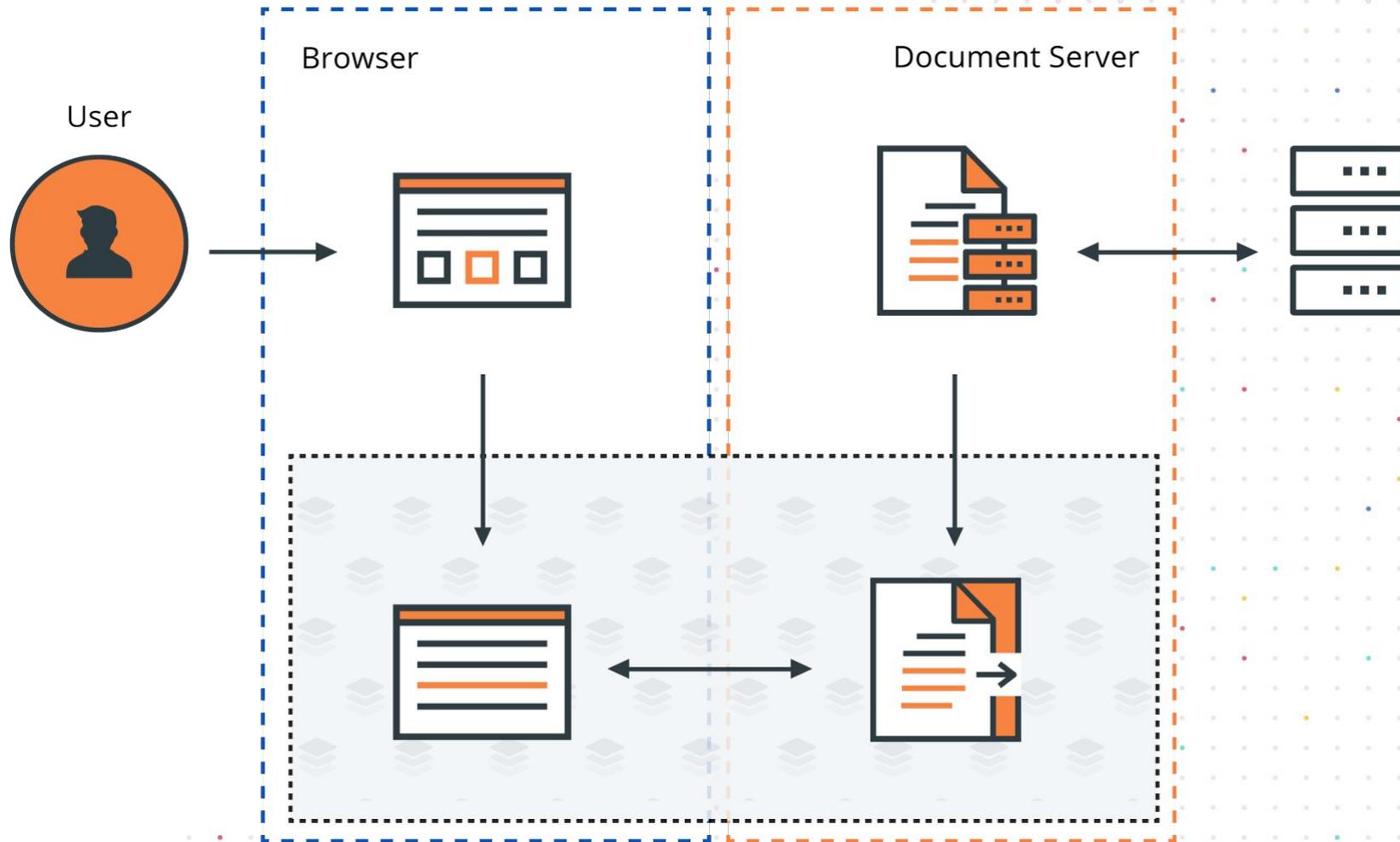


ONLYOFFICE open API

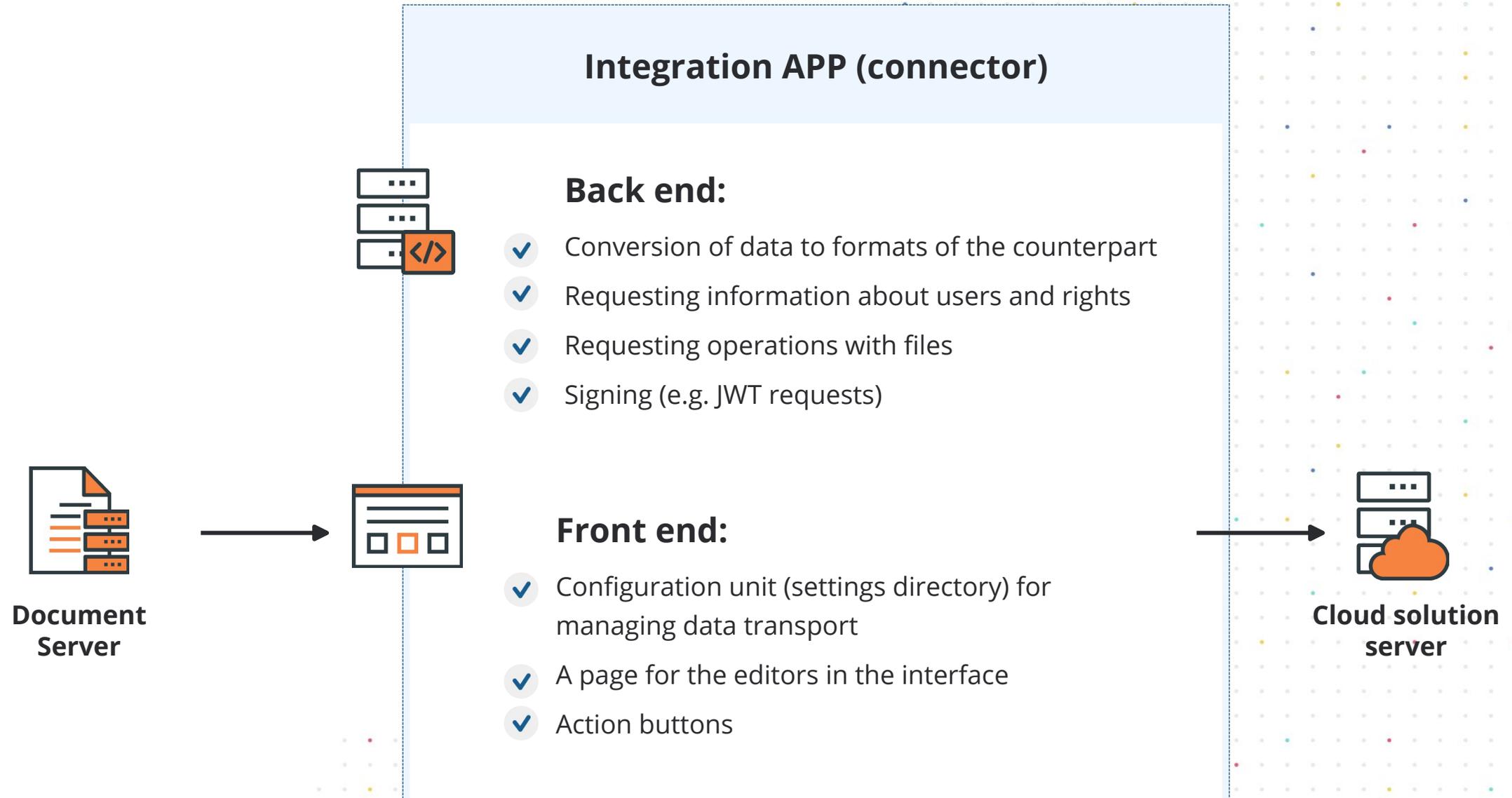
- ✓ Document editing and collaboration
 - ✓ Document building
 - ✓ Mentions
 - ✓ Content Controls
 - ✓ Version History
- and more



ONLYOFFICE integration API



ONLYOFFICE integration API



ONLYOFFICE integration API: examples

Developed by our team



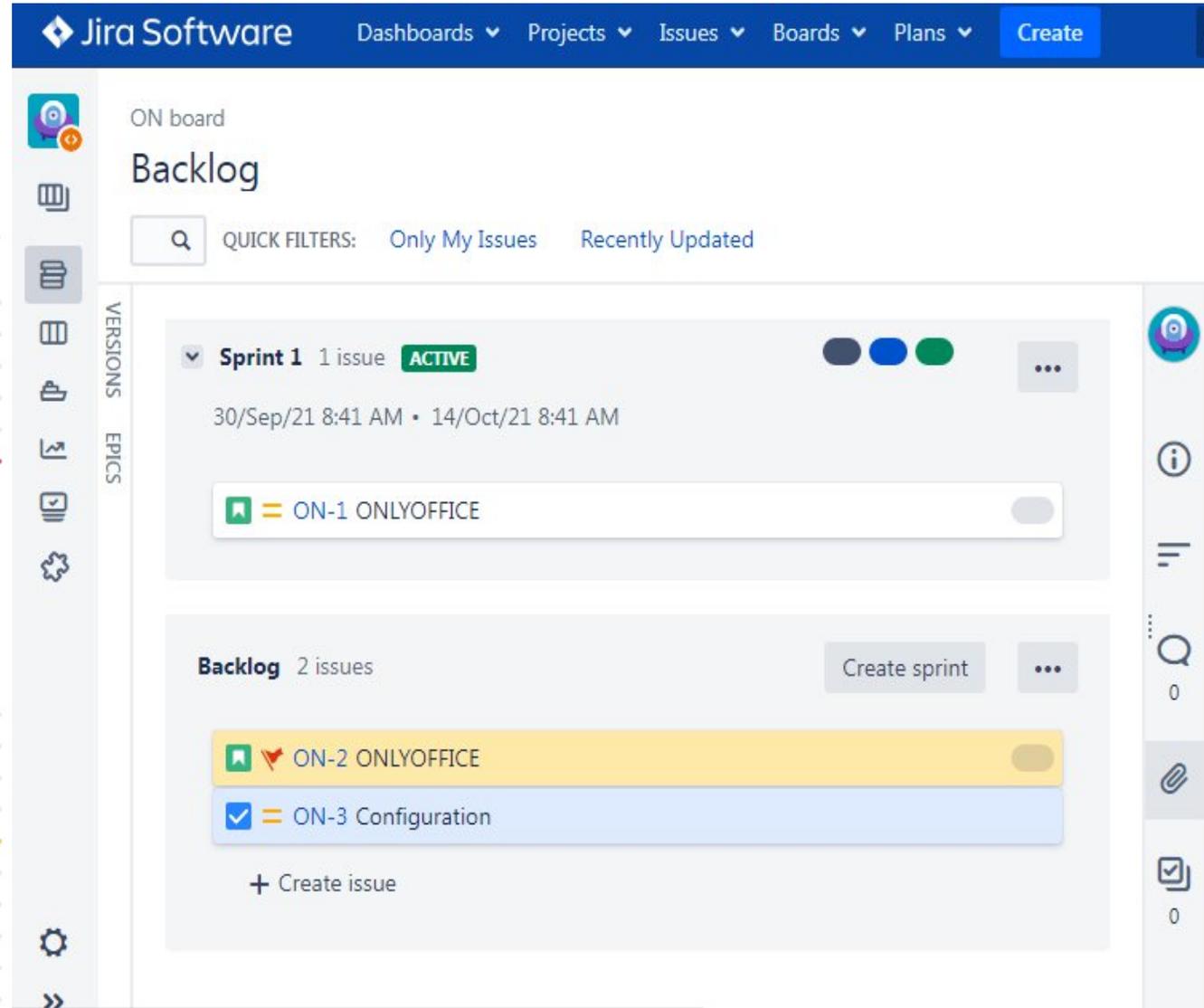
Provided by official partners



New ONLYOFFICE integrations

◆ Jira Software

- ✓ Viewing and editing office files attached to Jira tasks
- ✓ Real-time collaboration, review, comments, chat
- ✓ Working with online forms
- ✓ Easy configuration from the Jira administration panel



The screenshot displays the Jira Software interface for a project named "ON board". The main view is the "Backlog". The top navigation bar includes "Dashboards", "Projects", "Issues", "Boards", "Plans", and a "Create" button. The "Backlog" section shows a search bar and "QUICK FILTERS" for "Only My Issues" and "Recently Updated".

Under the "VERSIONS" and "EPICS" sidebar, there are two main sections:

- Sprint 1**: Labeled "1 issue" and "ACTIVE". It shows a date range from "30/Sep/21 8:41 AM" to "14/Oct/21 8:41 AM". Below this, there is a toggle switch for "ON-1 ONLYOFFICE" which is currently turned off.
- Backlog**: Labeled "2 issues". It includes a "Create sprint" button and a "..." menu. Below this, there are two items:
 - ON-2 ONLYOFFICE**: A yellow bar with a red checkmark icon and a toggle switch that is turned off.
 - ON-3 Configuration**: A blue bar with a blue checkmark icon.

At the bottom of the backlog section, there is a "+ Create issue" button. The right sidebar contains various utility icons, including a chat icon with a "0" notification.

New ONLYOFFICE integrations



- ✓ Editing files within Issues, Files, Documents, Wiki, News modules
- ✓ Real-time collaboration, Track Changes, comments, chat
- ✓ Working with forms
- ✓ Quick configuration
- ✓ Editor customization settings



Home My page Projects Administration Help

ONLYOFFICE

 Search:

+ Overview Activity Issues Spent time Gantt Calendar News

Create Document

Document
11/01/2021

Create Document !

Files

 EN Sample Document.docx (68.4 KB) 	Redmine Admin, 11/02/2021 01:50 PM	 
 EN Sample Spreadsheet.xlsx (75.9 KB) 	Redmine Admin, 11/02/2021 01:50 PM	 
 EN Sample Presentation.pptx (515 KB) 	Redmine Admin, 11/02/2021 01:54 PM	 

New file

New ONLYOFFICE integrations: third-party connectors



WebWeaver®

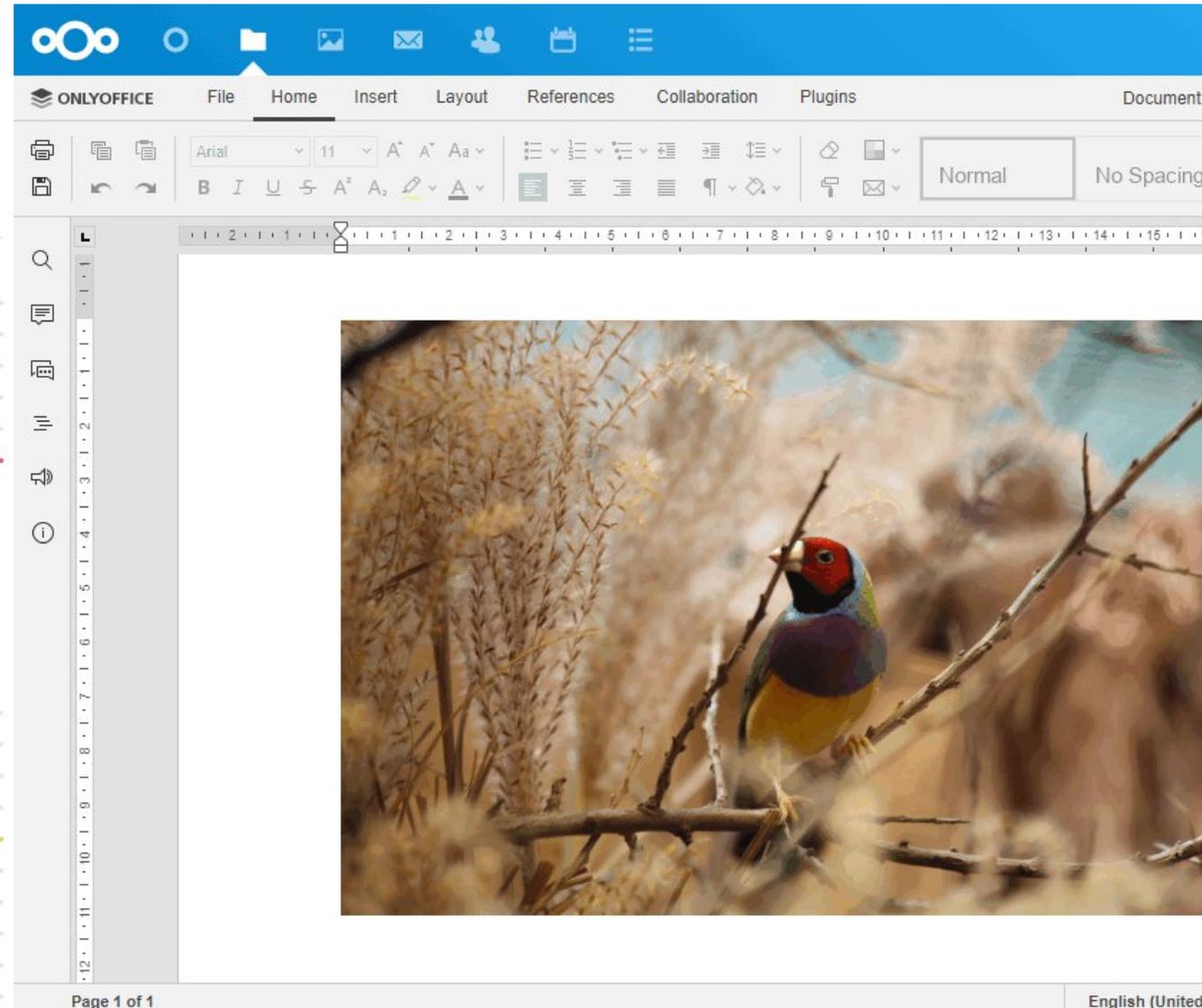


FileBlog

QUASARO

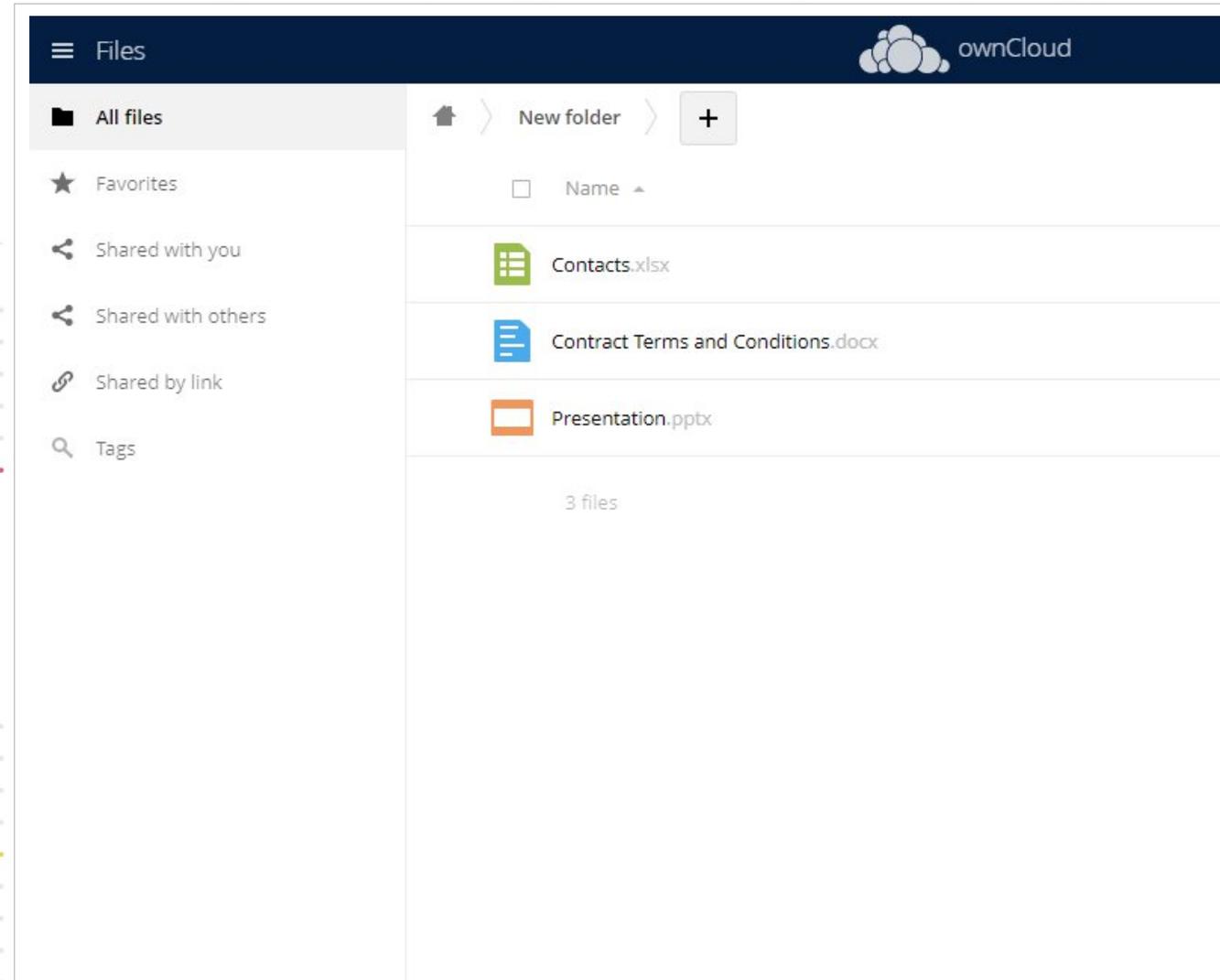
Nextcloud integration: what's new

- ✓ Online form creation and filling
- ✓ File creation from the editor
- ✓ Document templates
- ✓ Ability to restrict copying of document data
- ✓ New languages for blank file creation (23 in total)
- ✓ Restoring previous versions of documents in the editors' interface
- ✓ ONLYOFFICE favicons on browser tabs
- ✓ By-default opening of documents shared via external links



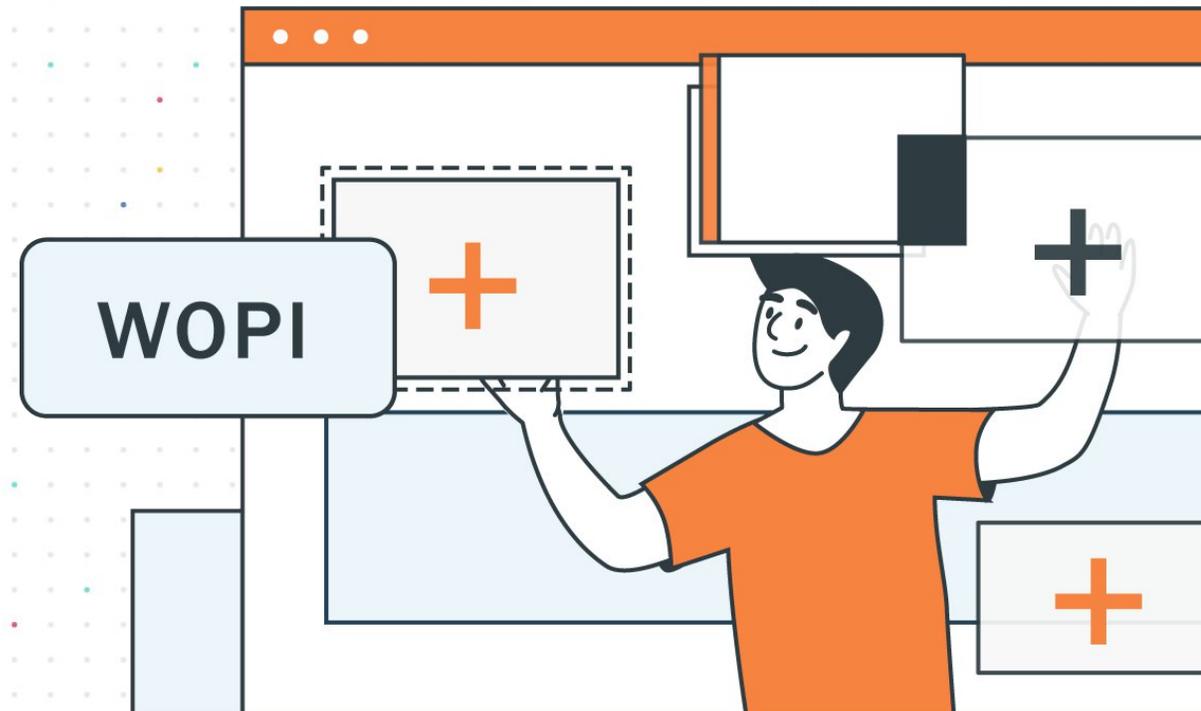
ownCloud integration: what's new

- ✓ Online form creation and filling
- ✓ File creation from the editor
- ✓ Support for custom templates
- ✓ Ability to restrict copying of document data
- ✓ New languages for blank file creation: Azeri, Slovak, Ukrainian, and Vietnamese
- ✓ Restoring previous versions of documents in the editors' interface
- ✓ By-default opening of documents shared via external links
- ✓ Support for ownCloud Web



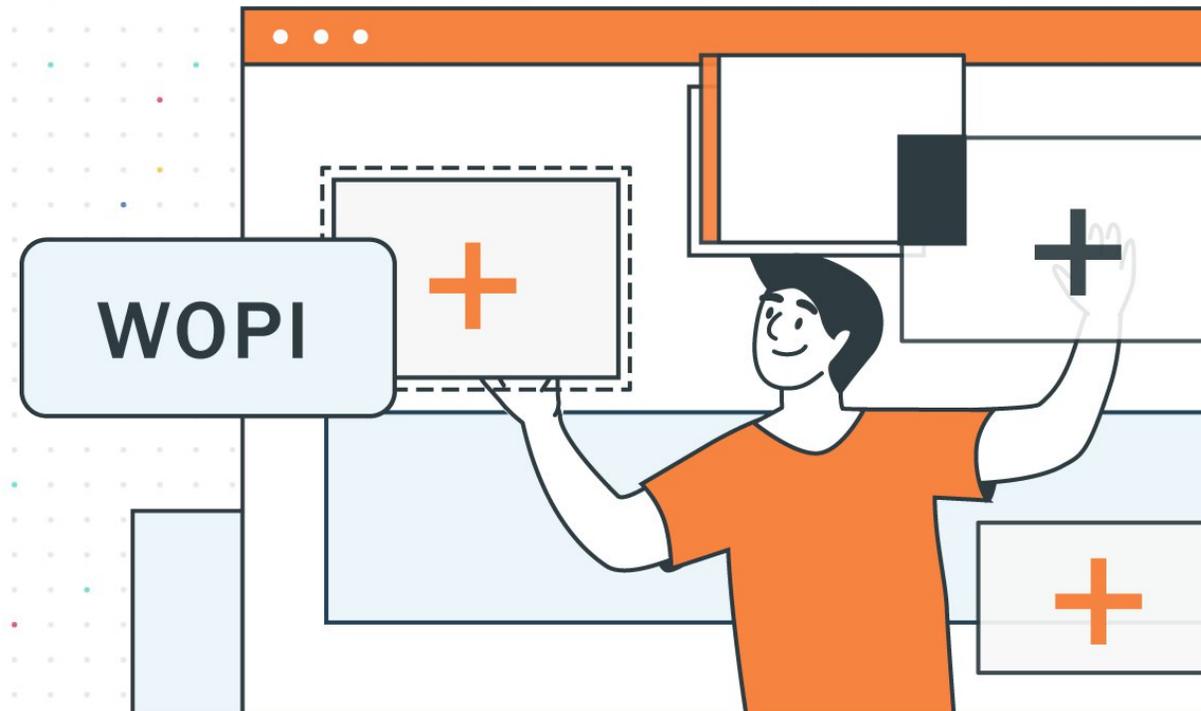
Integrating ONLYOFFICE Docs using WOPI

- ✓ Supported since version 6.4 of ONLYOFFICE Docs
- ✓ Allows connecting ONLYOFFICE Docs to cloud services which provide a universal WOPI connector
- ✓ Already available, tested integrations: SharePoint, FileCloud, OpenKM, ownCloud (oCIS)



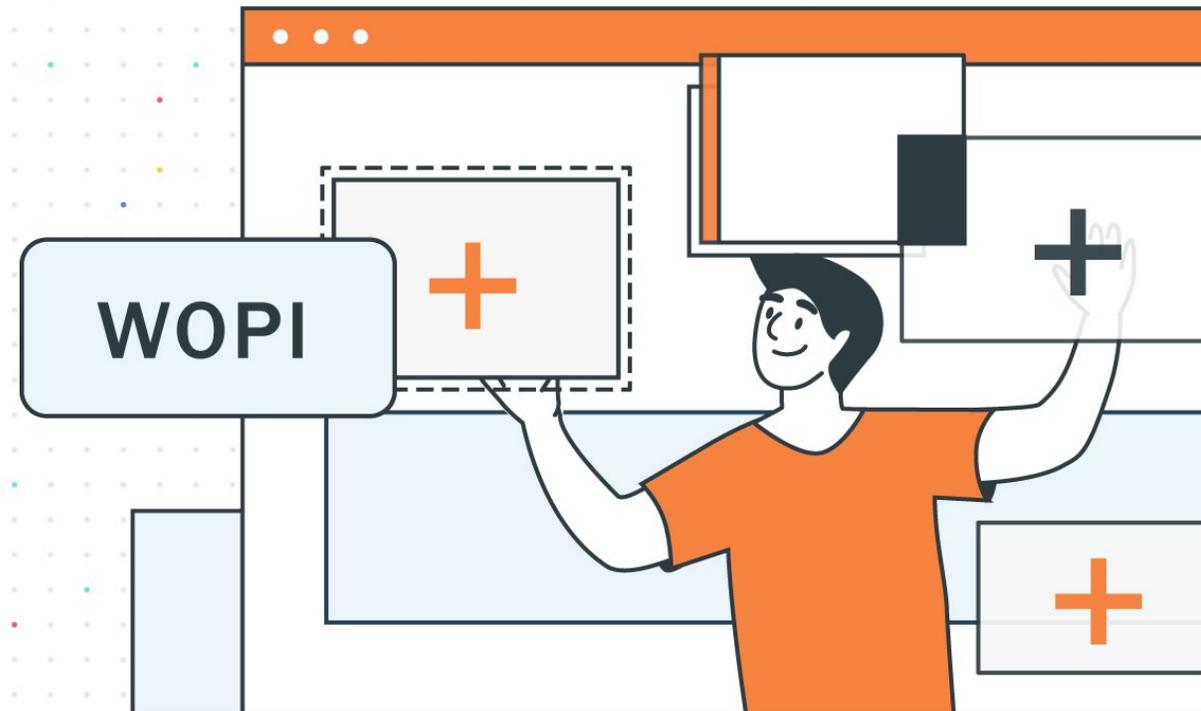
WOPI-based integration

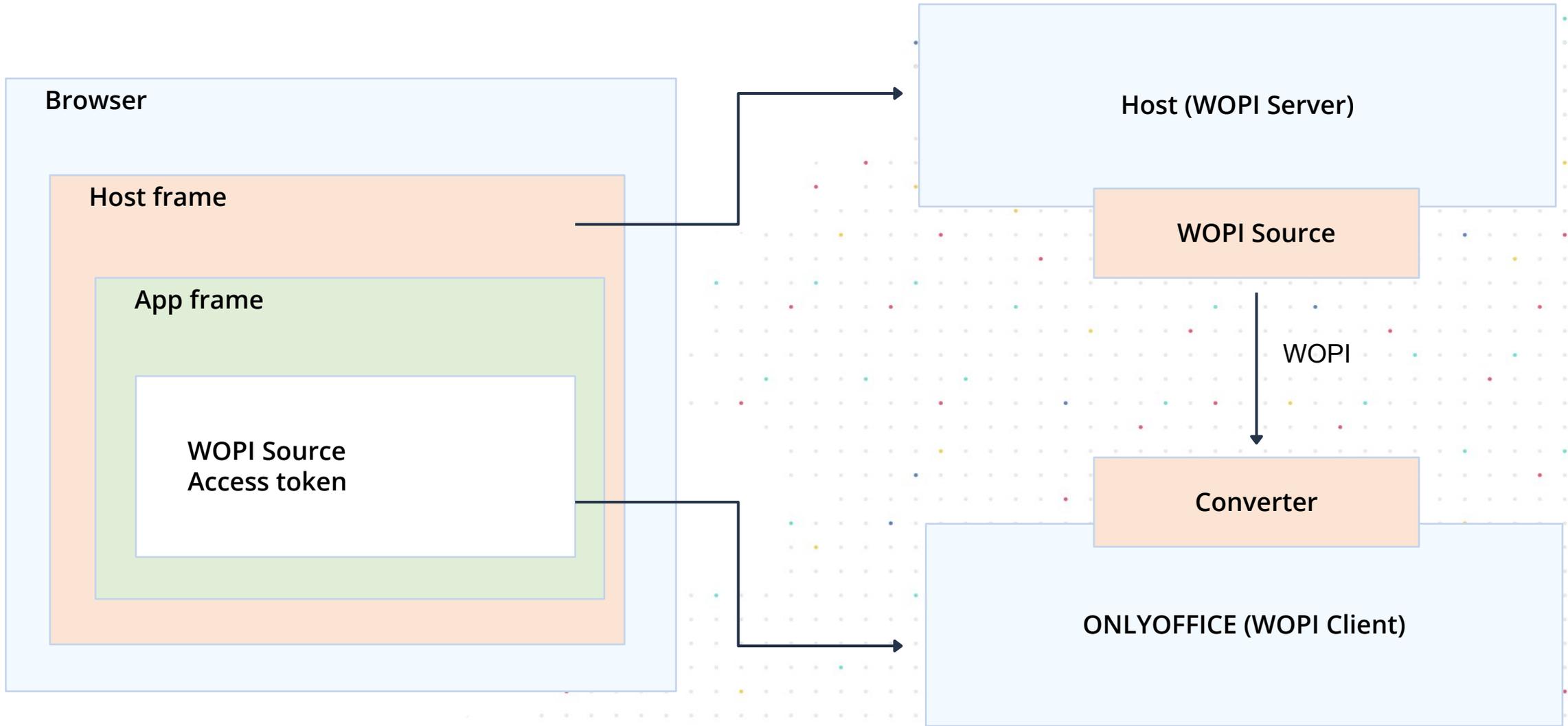
- ✓ Web Application Open Platform Interface
- ✓ REST-based protocol
- ✓ Universally adopted approach first introduced by Microsoft in 2012
- ✓ Defines a set of operations that enables a client to access and change files stored by a protocol server
- ✓ Allows the client to render files and provide file editing functionality



WOPI-based integration

- ✓ Primarily supports docx, pptx, xlsx
- ✓ Used by 3rd parties to integrate Office Online/Office Online Server
- ✓ Adopted by FileCloud, Nextcloud, ownCloud, eXo Platform, Odoo, and other sync&share services
- ✓ Also allows integrating Collabora Online, ONLYOFFICE Docs





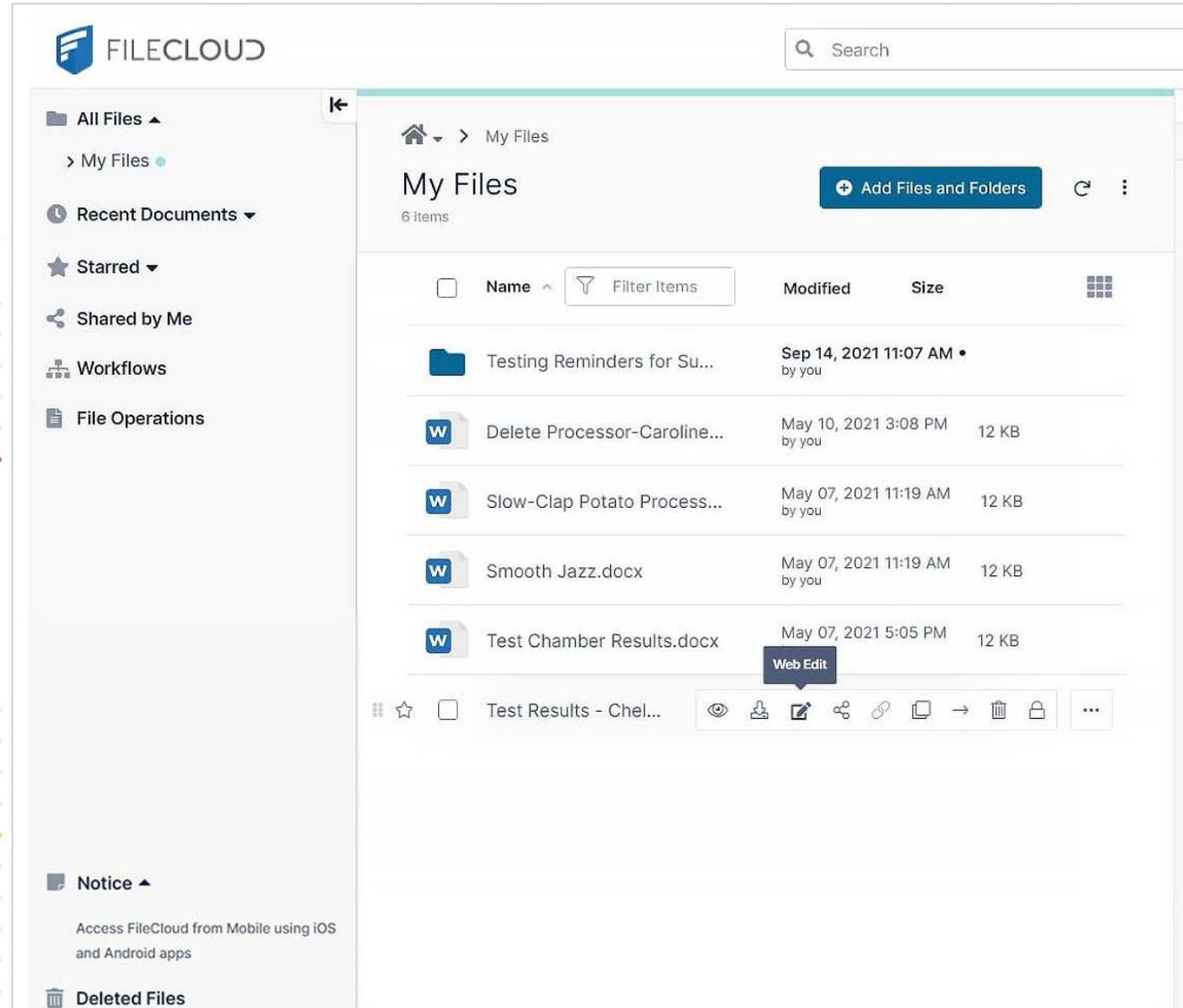
ONLYOFFICE Docs WOPI connectors



New partner integrations



- ✓ Easy and secure access
- ✓ Real-time collaboration
- ✓ Custom experience
- ✓ WOPI integration



The screenshot displays the FILECLOUD web interface. On the left is a navigation sidebar with options: All Files, My Files, Recent Documents, Starred, Shared by Me, Workflows, and File Operations. The main area shows the 'My Files' view with a search bar and an 'Add Files and Folders' button. A table lists files with columns for Name, Filter Items, Modified, and Size. The files listed are:

Name	Modified	Size
Testing Reminders for Su...	Sep 14, 2021 11:07 AM by you	
Delete Processor-Caroline...	May 10, 2021 3:08 PM by you	12 KB
Slow-Clap Potato Process...	May 07, 2021 11:19 AM by you	12 KB
Smooth Jazz.docx	May 07, 2021 11:19 AM by you	12 KB
Test Chamber Results.docx	May 07, 2021 5:05 PM by you	12 KB

A 'Web Edit' button is overlaid on the 'Test Chamber Results.docx' file. At the bottom, a toolbar for the selected file includes icons for view, print, edit, share, link, copy, move, delete, and lock.

New partner integrations



- ✓ Seamless document editing and collaboration regardless of the device configuration
- ✓ Integration via WOPI

The screenshot shows the ONLYOFFICE online editor interface. At the top, there is a navigation bar with options: DASHBOARD, BROWSER, SEARCH, TASKS, EMAIL, METADATA, and ONLINE EDITOR. Below this is the ONLYOFFICE ribbon with tabs: File, Home, Insert, Layout, Formula, Data, Pivot Table, Collaboration, View, and Plugins. The main workspace displays an Excel spreadsheet titled 'invoice-template.xlsx'. The spreadsheet contains an invoice for 'John Hardware' with the following details:

- Customer:** John Hardware
- Address:** C/ Ramon Llull, Sineu, 07003
- Phone:** +34 888 777 666
- Fax:** +34 888 777 665
- Invoice #:** 2016-124
- Customer ID:** 124
- DATE:** 27/10/2021
- Due Date:** 02/02/2016

The invoice also includes a 'BILL TO' section for 'John Antares' at 'Mallorca Furniture, C/ Charles Hill, Sineu, 07003, +34 999 888 777'. A table below lists items with columns for 'DESCRIPTION', 'TAXED', and 'AMOUNT':

DESCRIPTION	TAXED	AMOUNT
[Service Fee]		1,000.00
[Labor: 5 hours at \$75/hr]		125.00
[Parts]	X	345.00
Subtotal		1,470.00

On the right side of the spreadsheet, there is a logo for 'Vertex42' and a 'Free Invoice Template' link. A note says: 'If you like this template, give it a +1 or link to Vertex42 from your website or blog. Thank you!' and a link 'click here to to revisi...'. At the bottom right, there is a 'Next S' section with a 'Vertex' logo and a list of features: 'Easily create, track and', 'Prepare aging and open', 'click of a button.', and 'Use almost any invoice customized templates you'.

Pros and cons of WOPI-based model



Pros:

- Abundant and standardized documentation
- Ready ways to perform connectivity checks
- Ability to integrate services into protected systems



Cons:

- Limited number of standardized methods (even for MS)
- Inability to enable most of existing functionality without new code from scratch
- Same need to create individual connectors

Current functionality limitations

	Our integration API	WOPI
Supported Formats	<p>For viewing and editing: DOCX, XLSX, PPTX, PPSX</p> <p>For viewing only: PDF, DJVU, TXT, CSV, ODT, ODS, ODP, DOC, XLS, PPT, PPS, EPUB, RTF, HTML, HTM, MHT, XPS</p>	<p>For viewing and editing: DOCX, XLSX, PPTX, PPSX</p> <p>For viewing only: PDF, DJVU, TXT, CSV, ODT, ODS, ODP, DOC, XLS, PPT, PPS, EPUB, RTF, HTML, HTM, MHT, XPS</p>
Collaboration	Switching between real-time and paragraph-locking co-editing modes	Only real-time co-editing, switching between the modes is not available in the interface
Limitations	All features available in the editors are available for integration	Version History, Mail Merge, inserting images from storage and comparison with a document from storage are not available

Overcoming limitations

1. Extending the API

Some features are not supported by the standard

Creation of own WOPI-compatible extension/layer to add non-standardized features (Document Comparison, Version History) is required

2. Extending support for standardized methods



ONLYOFFICE Docs within CS3MESH4EOSC

- ✓ **ownCloud (oCIS) connector-based integration**
- ✓ **WOPI-compatible connector developed by ownCloud**
- ✓ **Currently enabled features in ONLYOFFICE Docs-through-WOPI integration:**
 - File viewing and editing
 - Collaboration (real-time only)
 - Access rights management: viewing, editing, reviewing, printing, renaming
 - Version History (different from API version)
- ✓ **Supported formats:**
 - For viewing and editing: DOCX, XLSX, PPTX, PPSX
 - For viewing only: PDF, DJVU, TXT, CSV, ODT, ODS, ODP, DOC, XLS, PPT, PPS, EPUB, RTF, HTML, HTM, MHT, XPS



Integrating ONLYOFFICE Docs: summary

- ✓ **ONLYOFFICE Docs can be connected** to any cloud service using our API or WOPI
- ✓ Each platform requires its own **WOPI connector**
- ✓ **WOPI is not a complete alternative** to our integration API
- ✓ **We will continue to develop WOPI integration** where integrators prefer WOPI protocol or when building a connector using our API is not possible due to restrictions



WOPI integration: plans

1

We have enabled most of the features that an average user of the integrated platform requires.

2

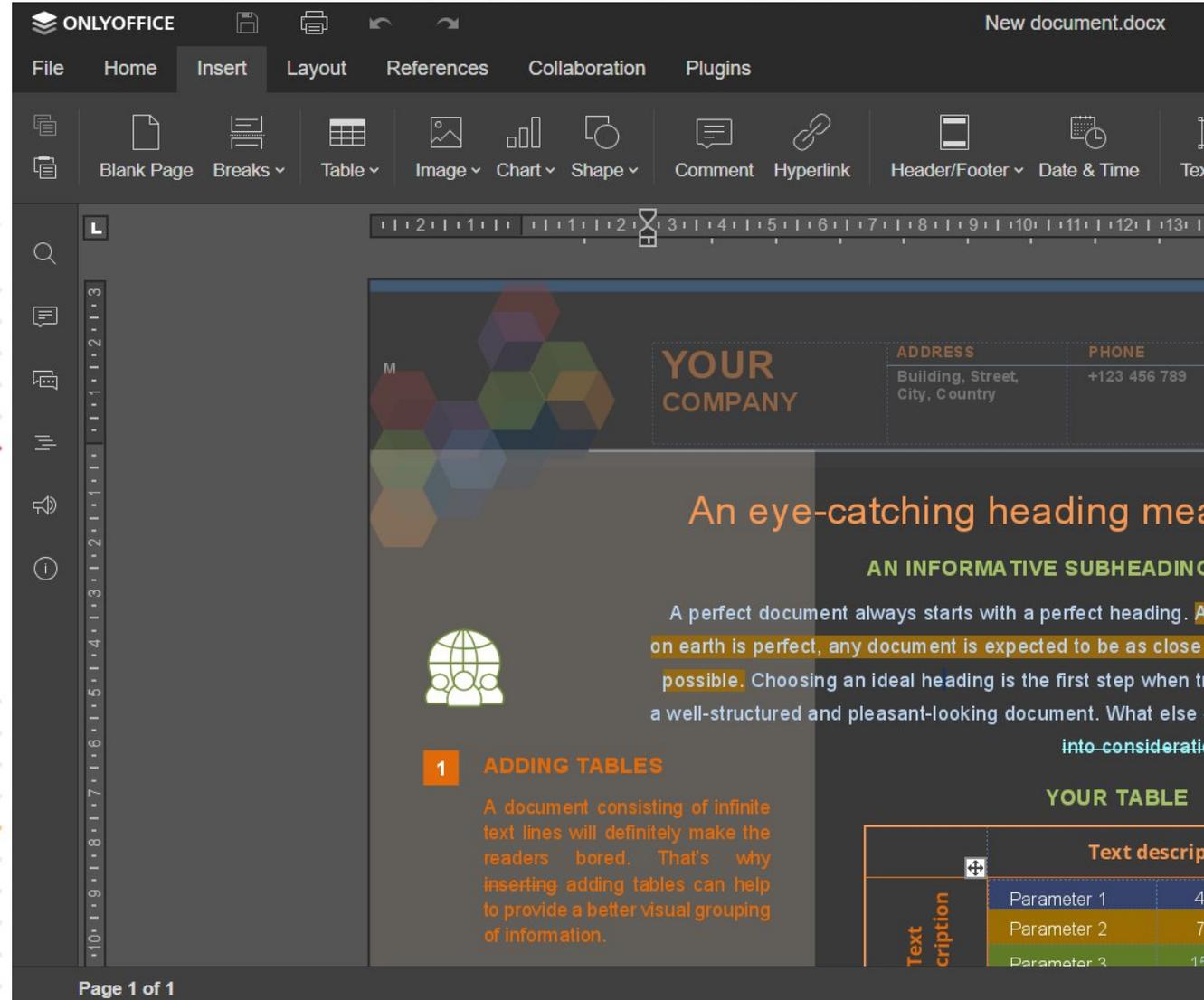
We plan to create our own WOPI-compatible extension to start releasing the unique functionality specific to ONLYOFFICE Docs in integrations.

3

We plan to build individual WOPI-based connectors for each Sync&Share platform to work with this extension.

Recent updates: ONLYOFFICE Docs 7.0

- ✓ **Form creation and filling;**
- ✓ **Accessibility and usability:** full Dark Mode, new scaling options, shortcuts
- ✓ **Collaboration:** Version History in spreadsheets, new changes display, user cursor in spreadsheets, new comment sorting options
- ✓ **New formats:** presentations to BMP and PNG, DOCXF and OFORM forms, editable PDF
- ✓ **Presentations:** Transitions tab, playing animations;
- ✓ Ability to select local file for Mail Merge;
- ✓ **Autocorrection:** hyperlinks and network paths (spreadsheets, presentations);
- ✓ **Spreadsheets:** password protection, query table viewing/saving
- ✓ **Jitsi plugin** for video calls and more



The screenshot displays the ONLYOFFICE Docs 7.0 interface. At the top, the ribbon includes tabs for File, Home, Insert, Layout, References, Collaboration, and Plugins. The Insert tab is active, showing options like Blank Page, Breaks, Table, Image, Chart, Shape, Comment, Hyperlink, Header/Footer, Date & Time, and Text. The document content area features a dark theme with a sidebar on the left containing search, list, and zoom icons. The main content includes a header with 'YOUR COMPANY', contact information (ADDRESS: Building, Street, City, Country; PHONE: +123 456 789), and a large heading 'An eye-catching heading me...'. Below this is a subheading 'AN INFORMATIVE SUBHEADING' and a paragraph of text: 'A perfect document always starts with a perfect heading. A on earth is perfect, any document is expected to be as close possible. Choosing an ideal heading is the first step when t a well-structured and pleasant-looking document. What else into-considerati'. A section titled '1 ADDING TABLES' explains that infinite text lines can bore readers and that adding tables helps with visual grouping. A table titled 'YOUR TABLE' is shown with columns for 'Text description' and 'Text descrip', and rows for 'Parameter 1', 'Parameter 2', and 'Parameter 3'.

ONLYOFFICE New document.docx

File Home Insert Layout References Collaboration Plugins

Blank Page Breaks Table Image Chart Shape Comment Hyperlink Header/Footer Date & Time Text

YOUR COMPANY

ADDRESS Building, Street, City, Country

PHONE +123 456 789

An eye-catching heading me...

AN INFORMATIVE SUBHEADING

A perfect document always starts with a perfect heading. A on earth is perfect, any document is expected to be as close possible. Choosing an ideal heading is the first step when t a well-structured and pleasant-looking document. What else into-considerati

1 ADDING TABLES

A document consisting of infinite text lines will definitely make the readers bored. That's why inserting adding tables can help to provide a better visual grouping of information.

Text description	Text descrip
Parameter 1	4
Parameter 2	7
Parameter 3	15

Page 1 of 1

Integration roadmap

1 New connectors: Slack, Trello, Strapi

2 Further enhancements for forms in integrations

3 ONLYOFFICE Docs in the cloud → www.onlyoffice.com/docs-cloud.aspx

4 Further work on WOPI integration

5 Integration with ONLYOFFICE Virtual Channels

6 Ready-to-use integrations in mobile apps

Thank you!

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Questions & info

