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# **Configuring, Deploying and Scaling Collabora Online**

Michael Meeks, Collabora Online



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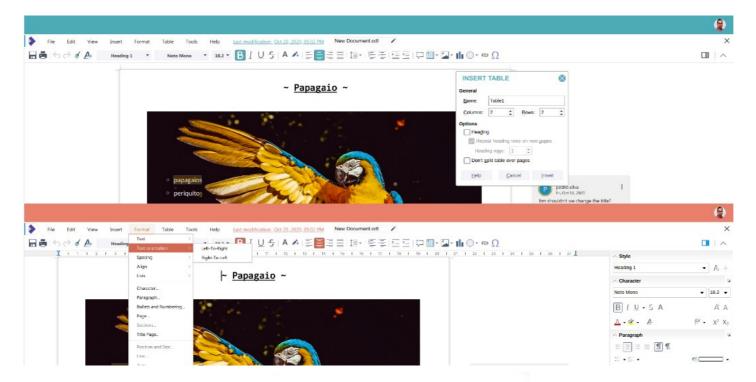
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# **Configuration and customisation**



### Themeing

- » Change the UI to adopt your visual identity
  - >> With CSS, change the colours and other attributes





### **UI layout**

- » Decide which UI elements are visible
  - » Status bar



» Ruler

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» Sidebar







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### UI layout (2)

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> Decide to use the traditional compact style UI



» or the newer tabbed interface

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### Configure

- » Add UI to select files
- » When the user wants to insert an image
- » To save file under a new name
- Insert a button with a custom action
- » An existing command in Collabora Online
- » A custom feature you implement
- » You can show / hide elements of the existing UI
- » Buttons and menus
- » Status bar, ruler, etc.

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» Customise error messages



### Integrate

- » You can decide what your application does in response of some Collabora Online actions
- » Connect your user list when collaborating
- » Mentions
- » Avatars
- » Manage the storage of the documents, and their access.





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# Kubernetes



### **Kubernetes references: 1&1**

- » 1&1: runs mail.com, GMX.DE ...
  - » 10's of millions of users
  - » Deployed on Kubernetes
    - > 50+ pods for editing, 50+ pods for viewing
    - » 35k documents edited / 24 hours
    - » 600k documents viewed / 24 hours.
  - » Contributed our initial Helm chart (since much improved)
  - » Helped to implement Prometheus monitoring
    - >> Easy beautiful charts in Grafana & Prometheus Operator
  - » Video talk on their integration & Kubernetes setup





### **Kubernetes references:**

**Technical University Berlin** 

- » A technology leader in German Universities
  - » 15k total users using COOL
  - » Seven schools with 34,900 students
  - » Providing a service for many other German universities
- » Deployed with:
  - » Helm3 chart
  - » Flexible (fixed) sizing for horizontal pod allocation
  - » Usually, they deploy 16 pods. They found that the CPU usage is not heavily loaded.





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- » Kubernetes based
- » Public details in OpenCoDE

https://www.openproject.org/blog/sovereign-workplace/ https://gitlab.opencode.de/bmi/souveraener\_arbeitsplatz/info#opendesk https://gitlab.opencode.de/bmi/souveraener\_arbeitsplatz/info#opendesk









### **Collabora Online helm chart**

- » Easy to deploy using helm chart
- » Available on artifacthub.io
- » Support for dynamic config

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- » For big setups, you maybe not want to restart every pod to modify WOPI hosts, therefore it is possible to setup an additional webserver to serve a ConfigMap for using Remote/Dynamic Configuration
- » Works well with Prometheus Operator (Helmchart) and there is setup of Grafana





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Dnline

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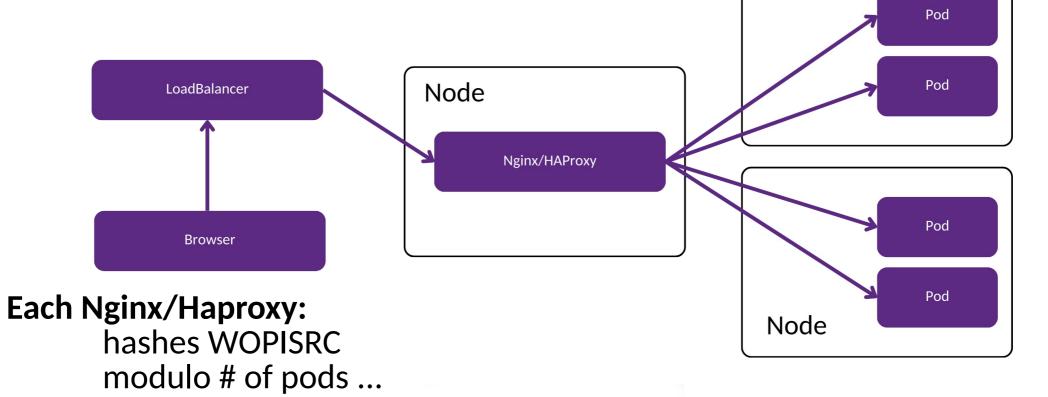
## **COOL Controller Improvements**



### **Current setup**

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### **Static routing on WOPISRC**



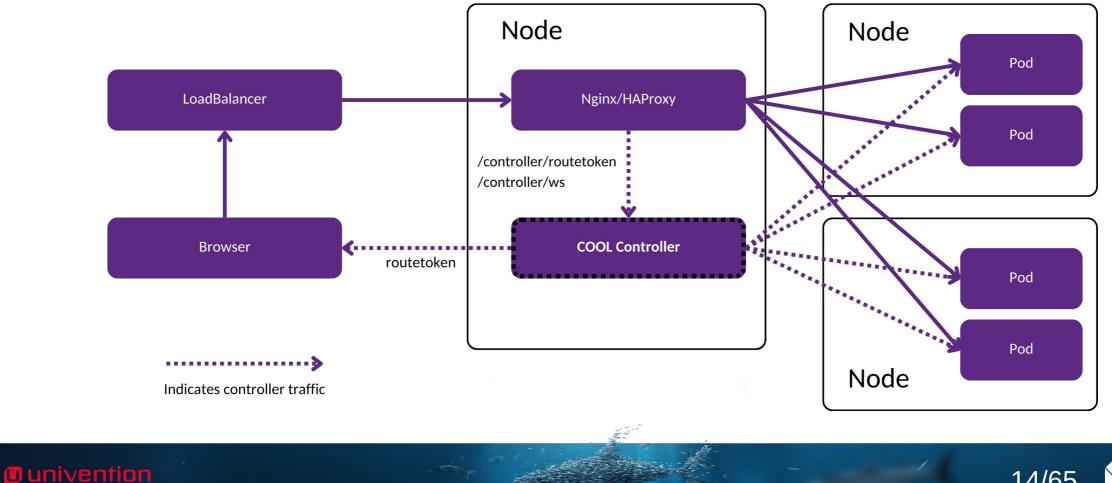
Node

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### **New cool-controller setup**

### **Controller manages pod scaling**



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### Improving autoscaling

» Without COOL controller requires static configuration

- » Routing by WOPISRC is based on the number of pods
  - >> If cluster auto-scales up/down this number changes
- » New users could end up on the wrong pod
  - Splits the document and copy-paste stops working
- >> Improved access to COOL admin console of individual pods

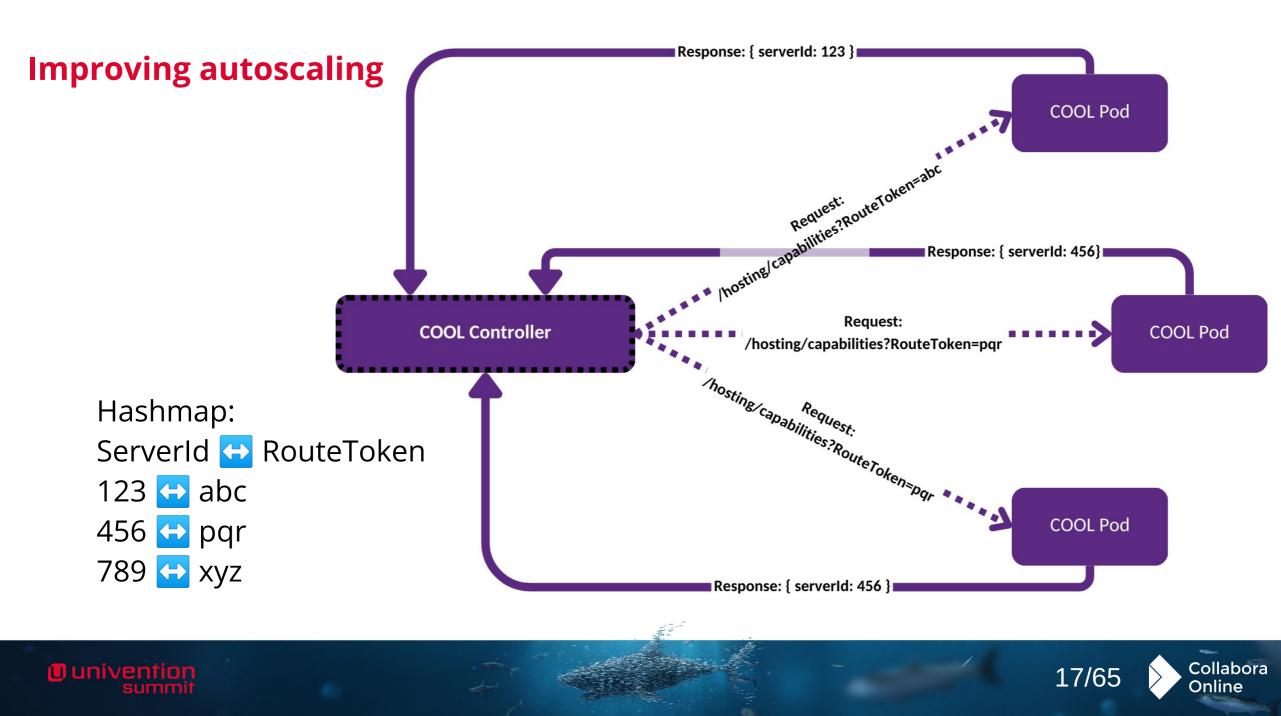




### Improving autoscaling

- When cluster topology changes, cool-controller creates a hash map of ServerId A RouteToken by sending /capabilities requests to each pod
- » RouteToken is a random token that identify to which pod request should end up
  - » Like a ZIP code for postage
- » If RouteToken is present in any request done to COOL, the request like opening a document, copy-paste etc will always go to the correct pod.
- » Every request to open a document goes to controller first and controller sends user URI for websocket connection with amended RouteToken parameter of the least loaded pod
- » Controller also sends respective routetoken to server pods so copy-paste request are handled smoothly



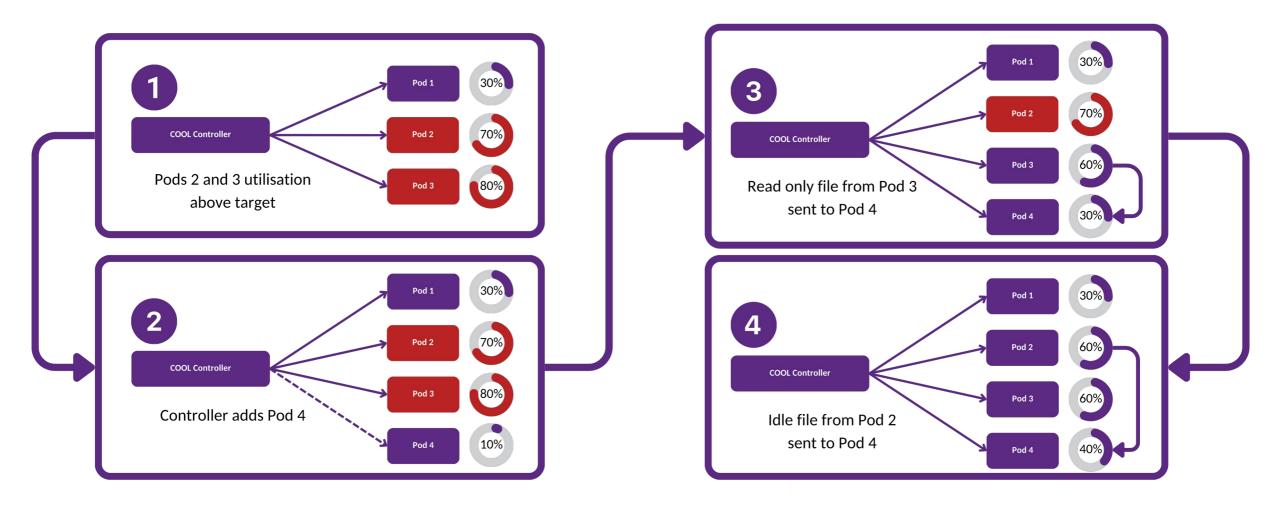


### Improving Load Distribution

- > When new pods have been spawned:
  - » COOL-controller tries to migrate documents from busy pods to newly spawned least loaded pods.
- » Migration is strategic:
  - >> We choose first read-only, idle, few-user pods to minimize disruption
- » Migration is smooth:
  - >> With new COOL versions retains user focus in the document
- This optimization results in an enhanced user experience and smoother collaborative editing.



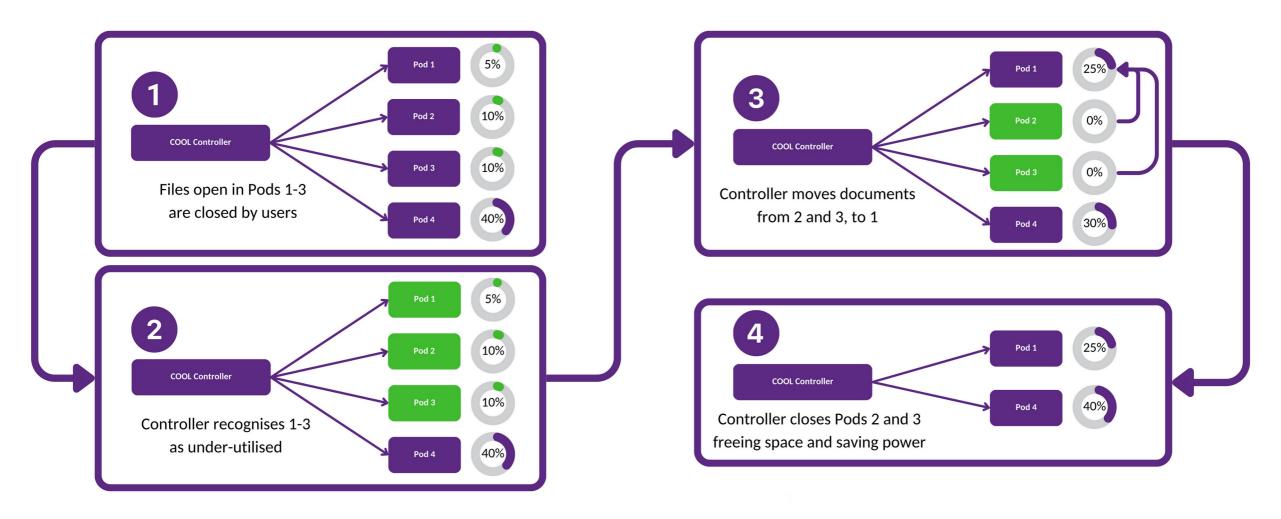
### Load Scaling Example – Target Pod Utilisation <70%



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### Load Scaling Example – Pod Under-utilisation



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#### Collabora Online Development Edition (unbranded) - Admin console

#### ← Pods

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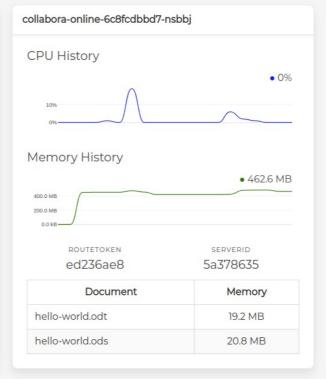
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#### Memory History







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### **Benefits**

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- » Ensures session consistency in document editing.
- » Mitigates performance degradation during scale events.
- » Simplifies management with a cluster overview.
- » Highly Available
  - » Multiple COOL-controllers can be run concurrently.
  - » COOL-controller uses the kubernetes leaderelection api to achieve high availability.
- > There is one leader pod and multiple follower pods.
  - >> If leader pod dies a follower pod will quickly become leader.
  - > This rapid transition only affects new users connecting to documents.
- » Easy to deploy by using helm chart of the controller.



### **Kubernetes conclusions**

- » Kubernetes
  - » Used in many large deployments
  - » Easy to deploy, use & monitor
  - » Few want to be reference customers
- > Collabora is investing to improve auto-scaling
  - >> This will also improve Admin-console management.



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### Recent Features Accessibility



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Dark mode + view settings

>> Per view settings, allows us to render views differently including various options such as showing non-printing characters or spell checking underlines in different views, in addition to Dark Mode.

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Keyboard accelerators

- » Expansion for languages
  - » Keyboard shortcuts have been expanded to allow all users to be able to use their own language's keyboard shortcuts when editing a file collaboratively.
  - Holding down the 'Alt' key will also highlight options for learnability.

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	fix) support (other levels are provided by our <b>Excellent Interoperability</b>	<ul> <li>Excel/Calc</li> <li>spreadsheets: .xls, .xlsx, .xlt, .xltx, .o</li> </ul>							

Page Navigation

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Navigator functionality is
 viewable in the sidebar,
 allowing you to jump to each
 section by simply clicking the
 headings.

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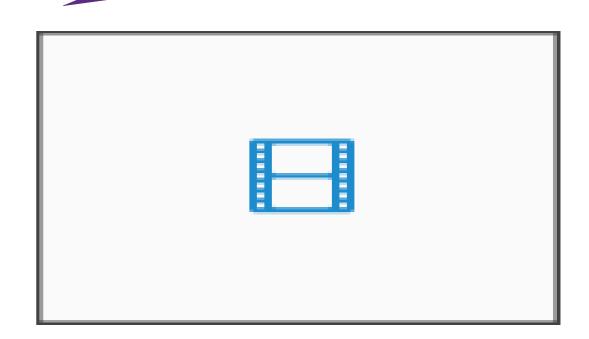
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Initial screen reader support

 Designed to assist users with visual impairments, this feature will unlock a world of possibilities, ensuring everyone can participate fully in online collaboration.







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JS-Dialogs for screen reader functionality

 Screen readers can now access menus, toolbars and dialogs.
 Many more of our ~thousand dialogs are rendered on the client side using Javascript,
 HTML widgets with WebARIA annotation.

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A complex example Javascript dialog

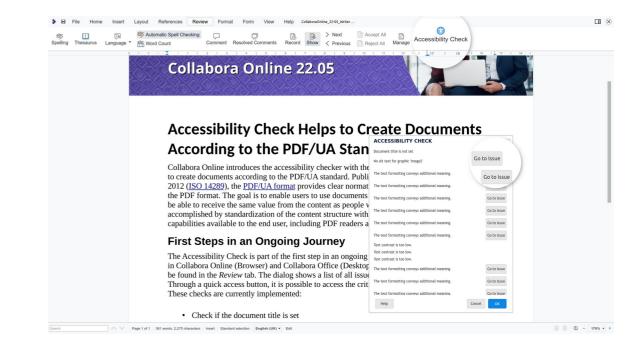
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Built in accessibility checker

Discover and fix accessibility
 problems in your documents
 before publishing them, and
 before your users suffer them.







Generating accessible PDFs with PDF/UA export

Tagged PDF, PDF forms,
 Universal Accessibility for PDFs,
 and many more options when
 exporting available in last year.

PDF Options	>					
General Initial View User Interface	Links Security					
	General					
	Hybrid PDF (embed ODF file)					
	Archive (PDF/A, ISO 19005)					
Range	PDF/A version: PDF/A-3b					
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Generating electronic books with EPUB export

- Ideal for accessible book
   readers, as well as many other
  - use-cases.

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### Recent Features Performance



### Performance

Image: Comparison of the second se

#### A faster, slicker experience

- Memory trimming on idle: cleans caches
   & frees up memory
- Swap out compressed image data as well as uncompressed
- » Faster load of large spreadsheets
- Significantly reduced re-rendering (even more pending)
- » Style re-thumbnailing redux

- > Improved tile pre-loading (with more caching work queued)
- » Clamp over-sizing of threads
- » Accelerated transparent text rendering
- Avoid background whole document renders
- » RLE tile encoding (pending)



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### Performance

#### Memory optimization

- » Less memory; used effectively
- Run-length encoding delta cache makes it far smaller and faster to use.
   Compressed image data swapping to reduce footprint. Trimming caches & allocators on idle. Larger compressed browser-side tile cache. Monotonic timestamp cache synchronization & expiry.

- » Saving power, and going faster.
- Reduced invalidation & re-rendering.
   Improved user prediction & pre-loading for better latency. Accelerated style
   previewing & thumbnailing. Optimized
   pixel manipulation & un-pre multiplication. Accelerated scrolling & Javascript rendering.

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#### Performance

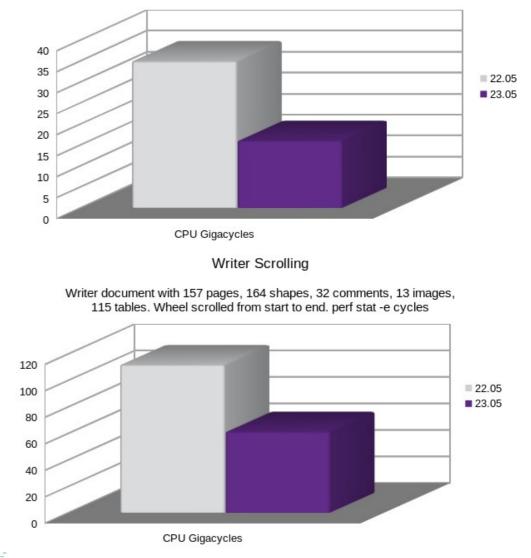
Performance tuning

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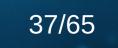
- Much faster for many operations –
   for example multiple users to join
   a shared Writer document and
   scroll through a long, heavy Writer
   document.
- Improved threading of tile
   compression
- » AVX2 optimized RLE compression
- Long term profiling of demo
   servers & targetted optimization ...

Joining Writer Shared Document

Writer document with 5 pages. 20 users joining simultaneously, until all clients rendered. perf stat -e cycles



Smaller is better!



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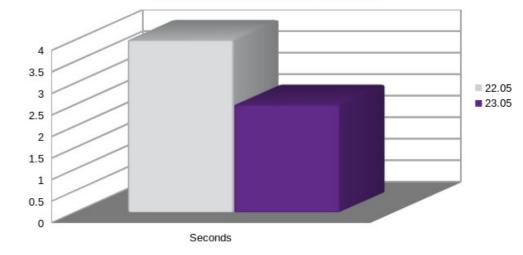
Impress Full Screen Presentation Generation

60 graphics heavy slides. Wall clock time.

#### Performance

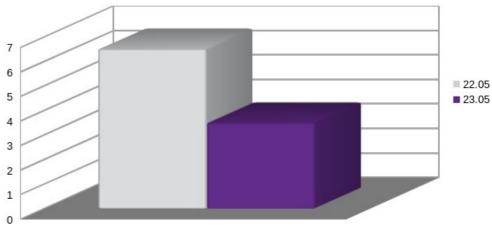
#### Performance tuning

Reduced time to load graphic
 heavy Impress slide decks, and
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 spreadsheets.









Seconds





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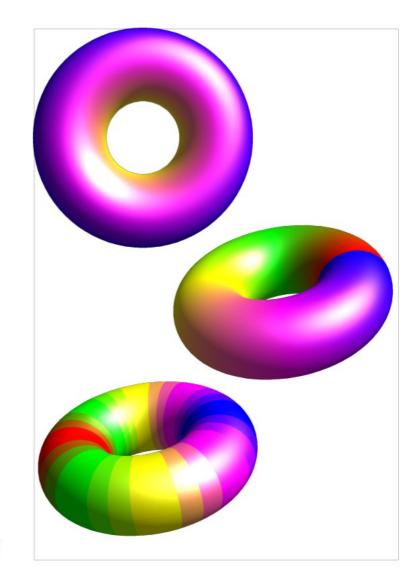
### Recent Features Interoperability



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Multi-stop gradients – improved rendering

The renderer has been >> enhanced and can now handle even more complex gradients. You can now turn up the visual appeal of your document by incorporating multi-stop gradients into shapes, borders, and other elements.

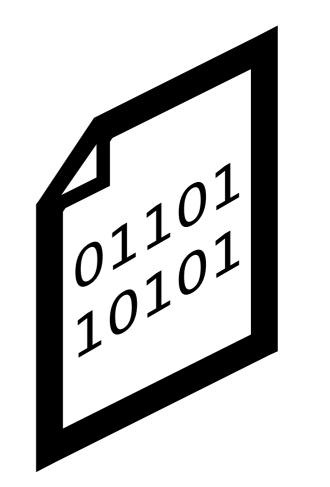




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64 bit Zip support – handling huge data sets

The Zip64 standard extends
 numerous internal limitations in
 the XLSX and ODS formats used
 to compress documents. Editing
 and working with huge
 spreadsheets is now possible.







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Compact Pivot Tables for Calc Spreadsheets

Preserve the compact view and
 layout of Pivot Tables created in
 Excel with a more compact
 layout avoiding the possibility of
 incorrect cell references.

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Table style design

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You can now modify table styles and create new ones in Impress and Draw. Modified styles are saved into documents, and can be shared via templates. You can access this function by right-clicking on a design in the Table Design Sidebar panel.

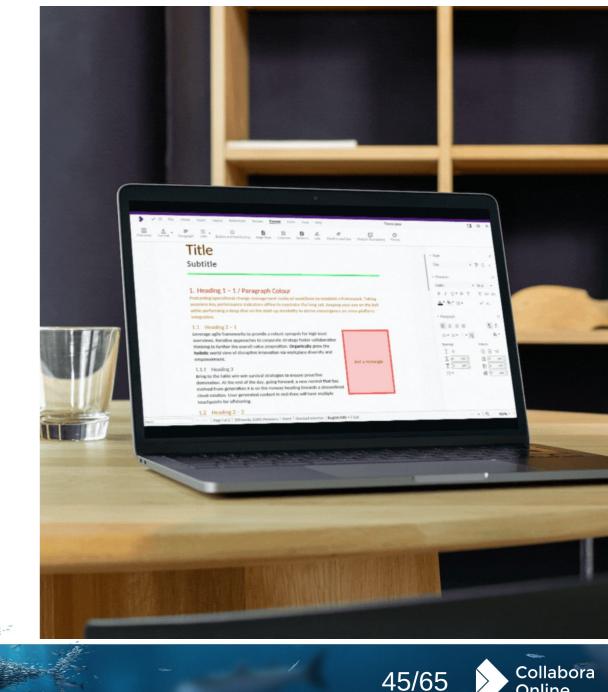
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Document themes – controlling branding

> Document themes can be >> configured and applied to a whole document to easily change and re-purpose the appearance, giving it a consistent style and branding.



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### Document themes – controlling branding

Document themes can be
 configured and applied to a
 whole document to easily
 change and re-purpose the
 appearance, giving it a
 consistent style and branding.

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val strategies to ensure proactive ay, going forward, a new normal that has the runway heading towards a streamlined content in real-time will have multiple

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Multi-page floating tables

- Significantly improves
   interoperability with tables that
   have been accidentally floated
   by users, and that span multiple
   pages.
- Lots of mis-designed
   Government forms where
   tables are used for rendering
   borders are improved, and
   rendered better.

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	And at this particular moment, just after he pulled off the big time and was making off with the greenbacks.	Was there another crook who'd had the same idea, and was now watching him and waiting for a chance to grab the fruit of his labor?	behind him mea that one of man	n		
			him and just	He tried to		
	He nervously looked all around.	Suddenly he saw the alley.	him and just waiting to pound and snap those? Like lightning he	ce nervously tap his way		



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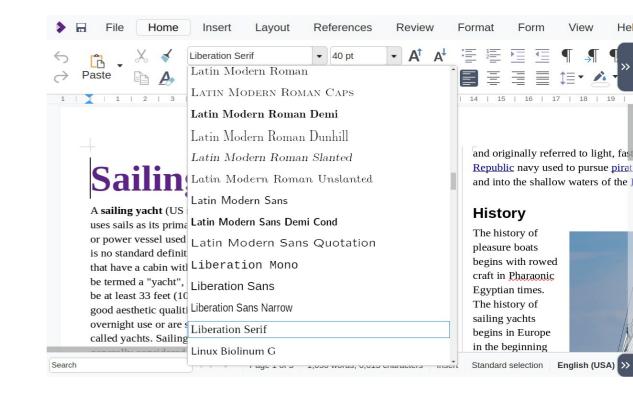
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### Recent Features Usability



Font previews

You can now see a preview of fonts to see what they look
like before selecting it in the drop down box.





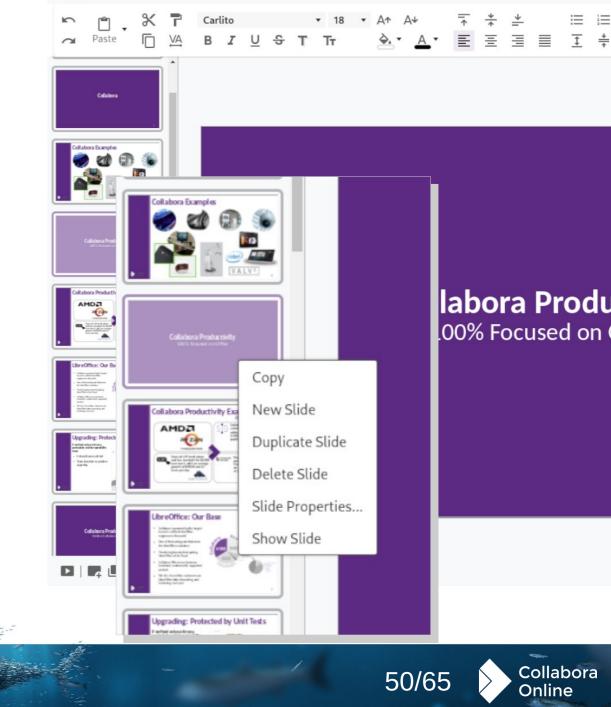


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Hide/show slides in Impress

 > Impress supports hiding and showing slides on the Slide
 Pane by right clicking and choosing 'Hide Slide' or 'Show
 Slide'. They will then shown or hidden throughout the full screen presentation.



Easy Barcode and QR code input

Bringing the existing
 LibreOffice technology's QR
 code functionality to your

browser:

Thanks to Shubham Goyal and Google Summer of Code

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college they attend.[2] For postgraduate students, research is conducted centrally in the faculties, departments and other university-affiliated research centres, though the colleges provide a central social and intellectual hub for students.



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#### Facilities

Colleges provide a range of facilities and service including catering, library facilities, extracurrice life at Cambridge is centred around college Student activity is typically organised throug postgraduate students. Another important elect frequency from weekly to every night of the w

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Colleges also provide funding, accommodation, or point, for some or the accuernic posts in university, with the majority of Cambridge academics being a fellow of a college in addition their faculty/departmental role.[3] Fellows may therefore hold college positions in addition

1 https://en.wikipedia.org/wiki/University\_of\_Cambridge

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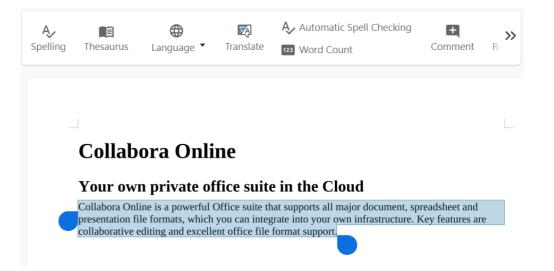




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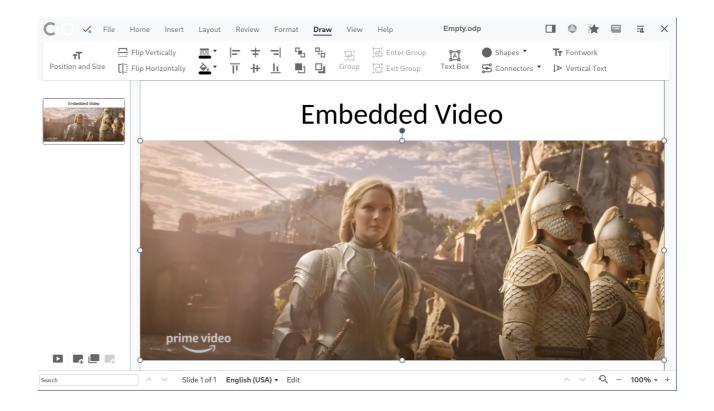




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