

2021 - All about



Collabora Online

Rendering wasteage and performance wins

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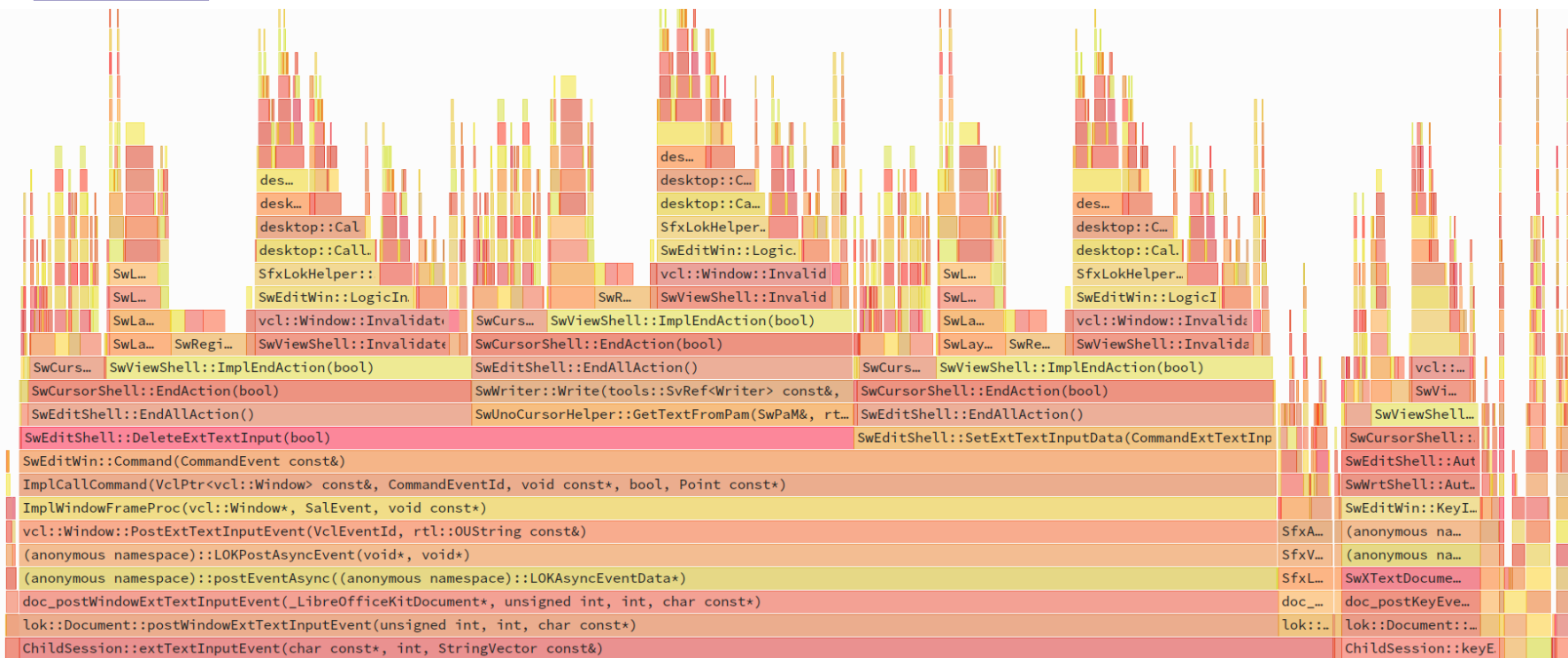
Collabora
Online

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Profiling Online (server)

- Optimized + symbols build of LibreOffice (*--enable-symbols*) and Online
- *perf record --call-graph=dwarf,65528 [-m 8M --aio -z] -- <command>* (not here)
- *perf record [...] -p <pid>*
- *perf record [...] -u <user>*
- *Ctrl+C* when done
- *hotspot perf.data*
- Call Graph → *kitbroker_001* → Filter In On Process (if *-u <user>*)

Profiling Online #2



Profiling Online #3

Symbol	Binary	cycles (self) ^	cycles (incl.)
desktop::CallbackFlushHandler::processInvalidateTilesEvent(d...	libsofficeapp.so	5.93%	23.7%
SwRegionRects::Compress()	libswlo.so	4.46%	15.2%
SwRect::Union(SwRect const&)	libswlo.so	4.17%	4.18%
SwRect::IsOver(SwRect const&) const	libswlo.so	3.75%	3.77%
std::_Function_handler<bool (desktop::CallbackFlushHandler::...	libsofficeapp.so	3.7%	4.77%
SwRect::IsInside(SwRect const&) const	libswlo.so	3.59%	3.61%
__dynamic_cast	libstdc++.so.6.0...	3.5%	7.39%
SwRect::Intersection(SwRect const&)	libswlo.so	2.89%	2.9%
_int_malloc	libc-2.26.so	2.07%	2.58%
__memcpy_ssse3	libc-2.26.so	2.01%	2.01%
_int_free	libc-2.26.so	1.81%	2.3%
__GI__libc_malloc	libc-2.26.so	1.79%	4.35%
SwRegionRects::operator=(SwRect const&)	libswlo.so	1.66%	5.63%
tcache_get	libc-2.26.so	1.53%	1.54%
__GI__strcmp_ssse3	libc-2.26.so	1.49%	1.5%
??	libstdc++.so.6.0...	1.36%	1.65%
__cxxabiv1::__vmi_class_type_info::__do_dyncast(long, __cx...	libstdc++.so.6.0...	1.3%	2.7%
__gnu_cxx::__normal_iterator<desktop::CallbackFlushHandle...	libsofficeapp.so	1.22%	5.75%
std::istreambuf_iterator<char, std::char_traits<char> > std::...	libstdc++.so.6.0...	1.18%	1.46%
__GI__libc_free	libc-2.26.so	1.03%	1.03%
__cxxabiv1::__si_class_type_info::__do_dyncast(long, __cxa...	libstdc++.so.6.0...	0.982%	1.28%
std::basic_streambuf<char, std::char_traits<char> >::xsputn...	libstdc++.so.6.0...	0.822%	3.72%
desktop::CallbackFlushHandler::queue(int, char const*)	libsofficeapp.so	0.799%	33%
vcl::Window::ImplClipChildren(vcl::Region&) const	libvcllo.so	0.711%	0.781%
std::ostream::sentry::~sentry()	libstdc++.so.6.0...	0.692%	0.692%
__memchr_sse2	libc-2.26.so	0.691%	0.692%
std::basic_ostream<char, std::char_traits<char> >& std::__o...	libstdc++.so.6.0...	0.624%	2.75%
std::locale::id::_M_id() const	libstdc++.so.6.0...	0.617%	0.621%

Message queue processing

Performance problem

- Messages to clients collected in a queue, optimized and sent to clients
- Flushing done using an “idle” timer
- When too busy, it takes a long time to be idle => long time before sending
- Long queue => long time to process adding new messages => more busy

Ways to improve

- Optimize code for processing queue => better CPU usage => sooner idle
- Handle large queue better => better CPU usage => sooner idle
- Limit timeout => extra non-idle timer => limited delays

Faster message writing

- Better data → string conversions (C++ iostreams slow)
- Better data → JSON writing (boost slow)
- => Noel's work

Geometry processing

SwRegionRects::Compress()

- slow, $O(N^3)$
- Compressing takes more resources than it saves
- => optimize code, $O(N^2)$ at most

SwRegionRects uses holes in an area

- Removing rectangles from area slow
- => add rectangles, compress

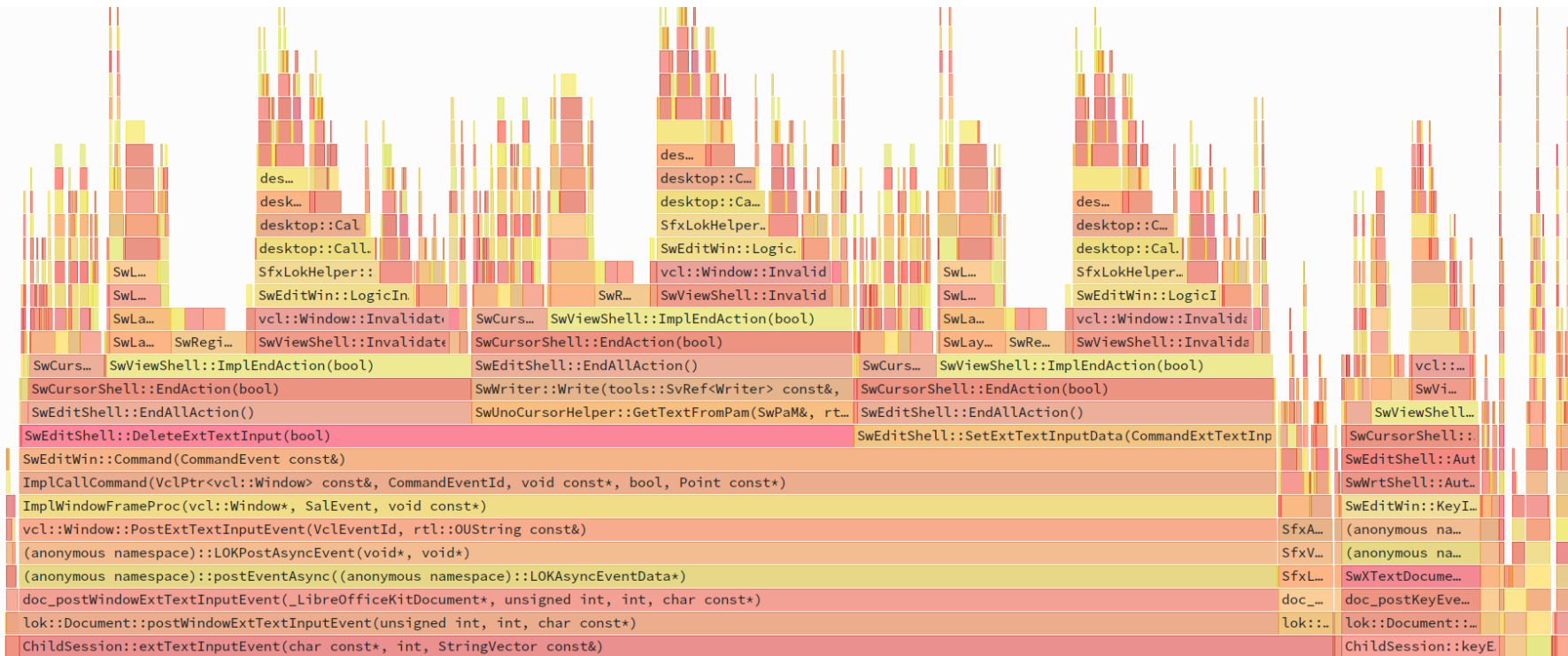
Idle window painting

- LibreOffice core renders to windows after a delay
- Online never shows a window, instead tiles sent to clients
- => avoid rendering to windows
- Needed fixing cases where rendering had side-effects

Message queue optimizations

- Two messages in queue may affect each other (can be merged or invalidated)
- Processing queue decodes messages back, slow
- => Keep internal data for fast queue processing
- Some generated messages are not actually used (superseded)
- => Do not generate them repeatedly, only once at the end

Profiling Online #4



Profiling Online #5 ...



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COOL
days



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Thanks !



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