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MALT and the status of recent licensing negotiations with Microsoft — proposed next steps

This report - prepared by the IT department - was presented and endorsed at the Enlarged Directorate meeting on 14th December 2021

Overview

CERN is now approaching a three-year optional exit point in its current licensing deal with Microsoft. The Organization plans to exercise this option, with detailed negotiations with Microsoft regarding a replacement deal having taken place over recent months. Thanks to the work carried out through the MALT project by many colleagues throughout the Organization to rationalise licence provision and to provide alternative products where appropriate, the IT department with support from the IPT department have been able to secure an arrangement that is an important improvement on the current situation. This new deal continues to provide CERN's diverse communities with appropriate tools at a cost that is around a third lower than that which would have been paid over the current contract's seven-year duration.

Through MALT, the Organization has learned important lessons (detailed within this report) that are already being applied to similar situations. This is particularly important as the changes made by Microsoft to its licensing structure are part of a broader trend within IT. These lessons have fed directly into the recent Audit of dependencies on external IT providers.

Introduction

CERN makes use of licensed software from many companies. In cooperation with the IPT department, the IT department supports CERN by negotiating and purchasing the licences for the software needed. The IT department then provisions this software to those who need it across CERN. The CERN community is not only large, but also highly heterogeneous in terms of needs.

As companies move from a "campus" to "cloud" model of software provision, many are requiring a specific number of people (or even named individuals) to be associated with licences. This transition has also seen companies revisiting and reassessing CERN's status as an "academic" institution, resulting in marked price increases.

Members of the CERN IT department first became aware of Microsoft's intention to radically change its licensing model in 2017. In December of that year, in a presentation to the ED, the IT department explained that Microsoft were changing the licencing model and prices for CERN, and this implied a more than 10 times increase of the yearly fees, with a 5-year ramp-up period. During this presentation, the IT department called for the establishment of a project, known as "MALT", to work to reduce our reliance on expensive licensed software (in particular, that provided by Microsoft).

In late 2018, a strategy for MALT was agreed upon and resources at the level of six additional FTEs (fellows) were provided to the IT department for a fixed period of three years, ending now, complemented by additional IT department personnel. The MALT project started and worked on addressing specific use cases (key use cases, services and products are detailed in the table in annex 1) and further details on the MALT strategy are provided in annex 2.

Negotiations

With the work of the MALT project underway, Microsoft eventually agreed to an improved deal with CERN for the start of its first "cloud" contract in early 2019. The price trend of this deal is shown in figure 1 (below). While this pricing structure is significantly better than that proposed in 2017, it was still far more expensive than the previous "campus" contract. Importantly, this "cloud" deal includes an exit option in every third year of its ten-year duration.

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In August 2020, Microsoft approached CERN to enter negotiations for a new replacement deal, based on a new "research" category created especially for CERN. On the basis of discussions on current and future use, Microsoft has made a new offer of 10k full licences and unlimited online licences (see fourth bar in fig 1), plus advanced security options. A comparative summary of the four "cloud" offers — that first proposed in 2017, that signed in 2019, and the two new proposals under discussion (with basic and enhanced security) — as well as the pre-cloud offer before 2017, can be found below in figure 1.

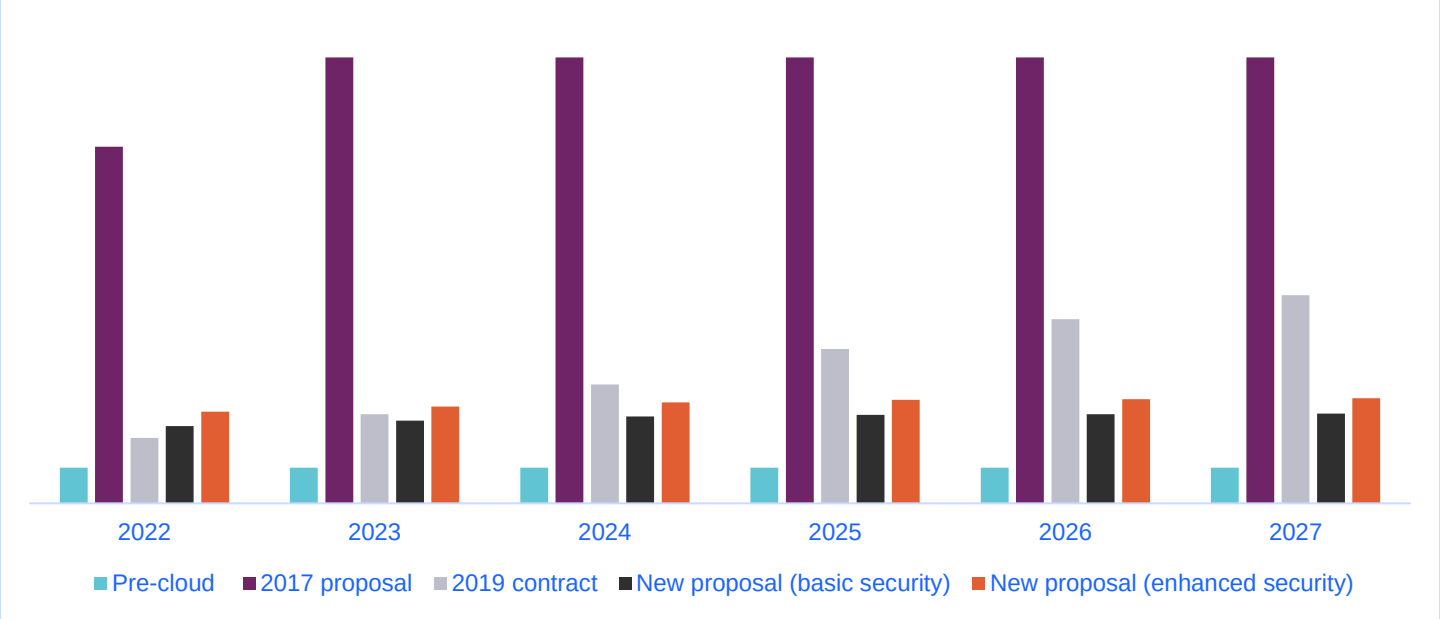
For each of the new proposed packages, around two thirds of the price relate to the Microsoft productivity suite (M365-A5), with the remaining third relating to additional applications, such as SQL Server, Visio, Project, PowerBI, etc. As mentioned above, the difference between the lower and higher new proposals from Microsoft comes down to security aspects which are primarily linked to mail.

The cost of the package recommended for endorsement (fifth bar, "New proposal (enhanced security")) is ~17% higher than the fourth one and includes an enhanced level of security for eligible persons in all CERN categories. The eligibility criteria and allocated licence options have been defined as follows:

- On site CERN members of personnel (MPE and MPA) will be provided with the Microsoft Office online and desktop suites, with enhanced security.
- CERN USERs will be provided with the Microsoft Office online suite only, with enhanced security.
- Other off-site collaborators will be provided with the Microsoft Office online suite.

The eligibility criteria outlined above have been defined with a view to needed capabilities, technical feasibility, cost containment, and security risk control to the Organization.

Fig. 1



Over the seven-year period shown (chosen to cover the common years shared across the deals), the proposed new deal has a total cost of approximately five times lower than the original 2017 proposal. One of the successes of the recent negotiations with Microsoft has been the agreement to secure the advantageous conditions of these new proposed deals for a full 10 years.

The 10-year duration of the deal provides the Organization with stability and ensures costs are predictable, provides access to main product-development line for the future (A5), thus ensuring that the Organization is well supported in terms of functionality, security and upgrades over the next decade.

Learnings

Over the past three years, the Organization has learned important lessons related to the provisioning of software licences. We believe the following six lessons to be of particular value and are applicable across the Organization:

- **Accounting**
  Everybody at CERN should be provided with the appropriate software tools required to do their work. This means that different work scenarios must be tailored for, rather than simply providing everyone with everything (regardless of need). Knowing the costs associated with software licences and exposing them to users and/or decision makers can help make better informed decisions.

- **Eligibility**
  Based on the above, we have learnt the importance of defining clear eligibility criteria for licenced products and applying these rigorously. This ensures that costs don't spiral in light of the growing number of personnel, within an increasingly complex landscape of personnel categories.

- **Standardisation**
  We should rely on out-of-the-box solutions wherever possible and keep customisation to a minimum, thus ensuring services remain manageable and paths for timely upgrades remain feasible and affordable, ensuring services remain secure and the latest functionalities are available. Only where there is a clear strategic need *and* out-of-the-box solutions are not available, shall we consider building custom solutions. This will help us to minimise technical debt, thus helping us to maintain agility, predict costs and enable technology evolution.

- **User engagement**
  It is vital that the right communications channels are in place so that we can ensure we fully understand needs and provide appropriate software products. We have learned to differentiate needs in a more fine-grained manner and choose best-fit solutions.

- **Architecture**
  Software products should not be seen independently, but rather as part of a soundly architected user-centric technology landscape across the Organization.

- **Data governance**
  Solutions must be compliant with CERN policies on security, data ownership, and data privacy. This is increasingly important as ever more software and services are provided via the cloud.

Conclusion

In specific terms, MALT has helped us rationalise licences and negotiate a significantly improved licensing deal with Microsoft for the coming years (thanks to the creation of a special "research" category for CERN). More broadly though, the exercise has helped us to learn valuable lessons (outlined above) about the provisioning of software licences across a unique — and highly heterogeneous — organisation like CERN.

Going forwards, the Organization will apply these lessons to other similar situations that are either currently ongoing, or which may arise in the future. Given that this move to a cloud licensing model is part of a wider trend, it is also vital to ensure that we have personnel with expertise in cloud licensing located with the relevant teams at CERN — both within the IT department and beyond.

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In line with the ED decision of 15 December 2020, the IT department is now working with IPT to finalise a proactive and centralised strategy for the procurement and management of commercial software. For this, “licence-clean-up” and “stay clean” initiatives are being defined which will need cooperation from all departments. This will help us to ensure efficient and appropriate licencing going forwards, making certain that needs are fulfilled across CERN.

The learnings and experience gained over the past three years are informing the nascent IT department strategy.

Next steps

The new deal is expected to be signed by the end of this year. At that point, the Organization can consider the MALT project to have fulfilled its primary objective: to rationalise licence provision and to provide appropriate productivity products. While MALT project will end, a number of important efforts will continue for mitigating risks related to landscape fragmentation, costs, data ownership, privacy and sovereignty for other licensed software products.
A table of the various services is provided in annex 1, with the decisions having been made based on the learnings outlined in the next section.

The IT department is now seeking endorsement from the ED on the following three points:

1- That we endorse the new Microsoft agreement proposed by the IT department based on the comparative analysis of options, on the ground of technical feasibility, long term functionality, cost containment and security risk control. The analysis is presented in annex 3 in the form of a red/amber/green matrix. The proposed option is number two.

2- That the MALT umbrella project is now closed, to be replaced by smaller, targeted initiatives focused on key use cases (annex 1)

3- That the IT department, with support from other departments, evaluates the implications and options of the eligibility criteria for the usage of computing resources at CERN, for a proposal for approval to ED in June 2022.

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Annex 1 Key use cases, services and products

Service	MALT product	Continuation	Proposed product	Availability date
Office Suite	OnlyOffice and LibreOffice	No	Microsoft Office	First half 2022
Notes	Joplin	No	Microsoft OneNote	First half 2022
Drawing	DrawIO	Yes	DrawIO and Microsoft Visio	Now
Project viewing	DHTMLX	No	Microsoft Project (on-demand)	Now
Terminal servers	FastX	No (to be discussed with ATS sector)	Windows Terminal Server 2016/2019	First half 2022
Kerberos and Lightweight Directory Access Protocol	FreeIPA	No	CERN Directory service based on Microsoft Active Directory	Now
Authentication and Authorization service	New Single Sign On, e-group replacement	Yes	New Single Sign On (SSO) CERN system. Replacement of CERN e-groups integrated in the new SSO and with improved privacy model.	New SSO: Now Replacement of e-groups: second half of 2022
Mail and calendar	Dovecot and Open Xchange	No	Microsoft Exchange (server), Microsoft Outlook (client), and other clients on demand.	2022
Mailing lists	Sympa	No	Microsoft Exchange mailing lists	Second half of 2022
Groupware	Newdle	Yes	Newdle	Now
	Mattermost	Yes	Mattermost	Now
	Discourse	Yes	Discourse	Now
	CERN Notifications	Yes	CERN Notifications	First half of 2022
Softphone	CERN Phone	Yes	CERNPhone, Microsoft Teams (for calls to Teams users only). Skype for Business to be discontinued by end-June 2022. Overall voice strategy being developed	CERNphone: now Microsoft Teams: 2022 pending technical review
Application management	CERN Appstore, Chocolatey and Flatpak	No	Computer Management Framework (CMF) for Windows. Self-service for Mac. Bring Your Own Device (BYOD) investigation in the medium term.	Now
Windows home directories	CERNBox	Yes	CERNBox Integrated Office 365 Applications storing files in CERNBox	Integration in First half of 2022
Cloud store		Yes	CERNBox. General review of strategy for backend storage in the medium term	Now
Content-management systems	Wordpress, Xwiki, CodiMD, LimeSurvey	Yes	Microsoft SharePoint Online, WordPress, CodiMD, LimeSurvey, Document library only sites to CERNBox.	Sharepoint Online: first half 2022 The rest, available now

Annex 2 - An overview of the MALT strategy

The MALT strategy has been to reduce the Organization's dependence on Microsoft products by identifying open-source alternative tools and assessing the real needs for Microsoft tools. Where viable alternatives have been identified, tools or platforms for provisioning have been built, with appropriate support provided to the CERN community. Equally, in terms of user needs, the MALT team has adapted licence-provisioning models to ensure that products are installed as needed, rather than automatically. Particular attention was paid to those with statuses such as PART, ENTC, EXTN, etc., so as to ensure that CERN does not needlessly replicate services already provided by a person's home institution.

User engagement was also a high priority for the MALT project. A special working group — with representatives from across departments and experiments — was established to gather use cases, build consensus, and communicate important project milestones. The representatives participating in this group were appointed by the CERN department heads, with the support of the ED. Key users for each of the prototypes were identified and input solicited.

The MALT project has helped us to rationalise the Organization's reliance on Microsoft products significantly and to better manage licence distribution. Thus, with this new commercial offer on the table from Microsoft, we believe that the Organization is now in a position to determine which initiatives started through MALT should be continued and which should be stopped. This will enable us to provide clarity to our user community, so they can continue to conduct their work in the most efficient manner possible, in accordance with their software requirements and preferences — while maintaining a sustainable technical landscape. This is summarised in annex 1.

The IT department is now engaging with communities to build user scenarios to ensure that a rich toolkit of services is provided to all appropriately, based on needs — both those working on and offsite. This will be vital in ensuring that we can continue to meet the diverse needs of all. All persons requiring standard Microsoft Office tools to carry out their work, will be provided with access. Those wishing or needing to use other productivity and collaboration tools will be supported in exploring the feasibility of doing so. For email, Microsoft Exchange will be provided as the standard solution provided by the CERN IT department.

Annex 3 - A red/amber/green matrix showing the four final scenarios considered.

Scenario 1 is the new deal with enhanced security (P2) for on-site members of personnel (MPE and MPA, except USERs), and basic security for the rest. This was discarded due to security concerns.

Scenario 2 is the recommended new deal with enhanced security (P2) for on-site members of personnel (MPE and MPA) and USERs (shown in the fifth bar in figure 1).

Scenario 3 is the new deal with enhanced security for all categories of personnel, and two technical implementations, leading to a higher personnel costs and technical complexity.

Scenario	MPE, Onsite MPA	USERs/ Off site others	Technical	Security	Cost
1	A5 (P2)	A1 (Basic security)			
2	A5 (P2)	A1 (Enhanced security)			
3	A5 (P2)	Dovecot(Enhanced security)			