



NAG 2020

NAG

Available to purchase until 31/07/2025

Numerical Algorithms Group. NAG produces and distributes numerical, symbolic, statistical, visualisation and simulation software for the solution of problems in a wide range of applications in areas including science, engineering, financial analysis and research.

Key Facts

Benefits

- Site or department licence
- Simplified “per operating system” licensing model
- Fixed pricing for three or five years

Important Dates

Agreement start: 1 August 2020

Agreement end: 31 July 2025

Subsequent invoice date: 1 May (or 1 February for "Early Bird" sites)

Commitment Period

Institutions may join the agreement from the date of joining until 31 July 2023 or until 31 July 2025. Sites licensed until 31 July 2023 can extend their licence for a further two years from 1 August 2023 to 31 July 2025.

Eligible Institutions

Higher and Further Education in the United Kingdom, and Universities and Colleges of Further Education in the Republic of Ireland.

Other organisations aligned with Jisc’s charitable objectives of supporting education, research bodies, charities and the public sector may ask to participate in the Agreement. Chest will liaise with the Supplier about any such requests.

Background Information

This long established Chest Agreement has been renewed for five more years to support the many sites that use NAG’s software products.

Product Information

Supplier Details

Licensor: The Numerical Algorithms Group Ltd, registered in England and Wales (company number 1249803), whose registered office is 30 St Giles, Oxford, OX1 3LE.

Product and Services News from NAG

The **NAG Library** gives academic staff and students access to over 1,900+ high quality mathematical and statistical routines from the language or environment of their choice (e.g. C/C++, C#.NET, Python, Java, Fortran, MATLAB, VBA/Excel, ...). These can be **accessed from University and personal computers** for academic use.

The **NAG Library** is now at **Mark 29.2** - find out more [here](#).

The **NAG Fortran Compiler** is considered the world's best checking Fortran Compiler, speeding your development of high quality compliant/portable Fortran code. It continues to progress and support the latest Fortran Standards available for Linux, Windows and Mac o/s and includes the Fortran Builder (GUI interface) on Windows.

Download the latest versions from [here](#).

Available NAG Resources

- **Contacting NAG Technical Support**;
- **Technical report repository** and **posters**;
- **Webinar repository**;
- **NAG GitHub** (includes lots of Python code examples and more);
- **Insights**;
- HPC & Software Training (*only included if a NAG Gold package is selected*).

NAG continues to collaborate with academics

- NAG experts regularly visit education sites to deliver training for our products as well give non-product related HPC training courses such as MPI, OpenMP, Fortran and CUDA
- NAG is actively involved with several UK Universities with partnerships for KTPs, Doctoral Centres, MSc projects and more

NAG is a not for profit organisation with roots firmly planted in industrial, academic and research collaborations.

Service and Support

Trials

Free evaluation trials are available. These can be accessed through the following pages:

Getting started with the NAG Library

Getting started with the NAG Compiler

Product Documentation

Product documentation may be downloaded from [here](#).

Training and Training Materials

Product Training is available from NAG.

Sites licensing NAG Software under the 'GOLD' option are entitled to 1 or 2 days HPC and Software Training from NAG per year. The provision of such courses is subject to trainer availability and travel and subsistence costs are chargeable.

Technical Support

Sites holding site-wide licences are entitled to up to a maximum of twelve Technical Contacts.

Sites holding department licences are entitled to two Technical Contacts.

Telephone support will be provided by NAG to the designated Technical Contact(s) or his/her deputy(ies).

NAG Contact Details:

- Switchboard: 01865 511 245
- Technical Support: support@nag.co.uk / <https://support.nag.com>
- Account Manager: Catherine Julian
- Phone: 01865 511245 (Direct Line)
- Fax: 01865 310139
- Email: operations@nag.co.uk
- Address: The Numerical Algorithms Group Ltd, 30 St Giles, Oxford, OX1 3LE

On-site support will be provided, upon request. For current charges contact NAG. NAG will provide consultancy support, as requested on a chargeable basis.

The software is controlled by licence keys. New keys are issued by the NAG Response Centre support@nag.co.uk

Supplier Web Address

Supplier home page: www.nag.co.uk

System releases, new versions and functionality

One copy of system releases and/or new versions and/or new supporting documentation will be sent by NAG to Licensed Sites as and when they become commercially available.

Platforms

Windows (32 and 64 bit), Linux (including 64-bit), Solaris, Mac OS X.

Hardware requirements are available from NAG.

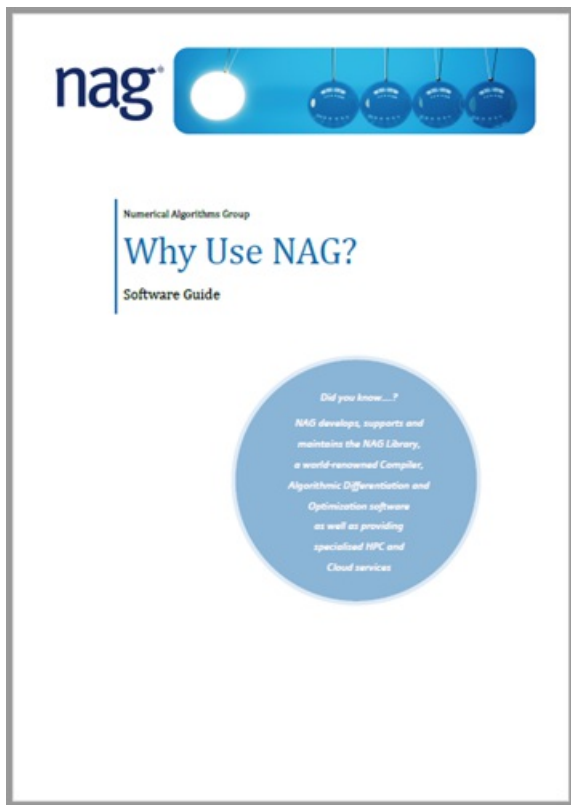
Method of delivery of product

Software is delivered via electronic download. The software is controlled by licence keys. New keys are issued by the NAG Response Centre support@nag.co.uk.

Useful Resources

What is NAG and why use it?

For anyone unfamiliar with NAG, [this PDF document](#) is a great introduction to the product, the people behind it, and how NAG helps students and instructors around the world. Click on the below image or above link to read more.



Other NAG Resources

- [Contacting NAG Technical Support](#);
- [Technical report repository](#) and [posters](#);
- [Webinar repository](#);
- [NAG Github](#) (includes lots of Python code examples and more);
- [Insights](#);
- NAG HPC consultants (*if included in your selected NAG package*).

NAG continues to collaborate with academics

- NAG experts regularly visit education sites to deliver training for our products as well to give non-product related HPC training courses such as MPI, OpenMP, Fortran and CUDA
- NAG is actively involved with several UK Universities with partnerships for KTPs, Doctoral Centres, MSc projects and more

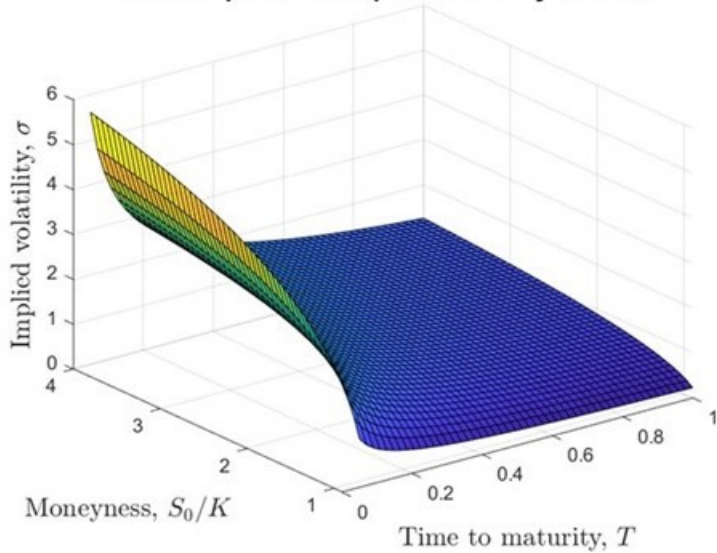
NAG is a not for profit organisation with roots firmly planted in industrial, academic and research collaborations.

Fast Implied Volatility with very high accuracy

Very high accuracy is achieved using the [new NAG Library solver](#) for computing the implied volatility of a European option contract – even for the most difficult of volatility surfaces. The new solver features in the latest NAG Library available to download [here](#).

The volatility surface can be highly curved, making it difficult to accurately compute the implied volatility. NAG's new solver, developed in collaboration with Dr Kathrin Glau (and team) at Queen Mary University, London, gives high accuracy and better performance for large datasets. NAG Library users now have solver options for single precision or the Jäckel method for even higher accuracy. Learn more [here](#). [Java](#) and [Python](#) examples can be found on the [NAG GitHub](#).

An example of an implied volatility surface



How to access the new NAG Library functionality

As with all new releases, NAG encourage NAG Library users to upgrade to the latest Mark to access the new content and performance improvements. NAG Library downloads are available [here](#).

If you don't have access to the NAG Library and you'd like to try the new functionality, NAG offer full [product trials](#). If you have any questions or need help, do get in touch with NAG's [Technical Support team](#).

Added 23 March 2021

New NAG Library functionality - solvers for QCQP, data fitting problems, AD, and fast implied volatility

"We are happy to announce the latest functionality available in the NAG Library at Mark 27.1. New additions expanding the Optimization Modelling Suite include a [novel nonlinear least squares solver](#) for unconstrained and bound-constrained data fitting (calibration) problems, and functionality to simplify [building and solving quadratically constrained quadratic programming \(QCQP\) problems](#).

Joining the major Optimization updates are more Adjoint solvers – available in the NAG AD Library which ships with the NAG Library. When used with NAG's AD tool [dco/c++](#), the NAG AD Library offers a smooth workflow which makes it easy to incorporate NAG solvers into a user's AD codes.

Of specific interest to finance industry professionals is a [new solver](#) for [computing the implied volatility of a European option contract](#). This new NAG Library solver achieves very high accuracy even for the most difficult of volatility surfaces.



How to access the new NAG Library functionality

As with all new releases, we encourage NAG Library users to upgrade to the latest Mark to access the new content and performance improvements. [NAG Library downloads](#) are available [here](#) (look for product codes NLW6I271EL and NLL6I271BL). The latest Mark functionality is also available in the [NAG Library for Python](#).

If you don't have access to the NAG Library and you'd like to try the new functionality, we offer [full product trials](#). If you have any questions or need help, do get in touch with our [Technical Support team](#)."

www.nag.com

First-order Active-set Method

A Highly Competitive Optimization Solver - Now in the [NAG Library](#)

New in the NAG Library at the latest Mark is a **First-order Active-set Method** (FOAS). FOAS is based on a nonlinear conjugate gradient for large-scale bound-constrained nonlinear optimization. The solver is ideal for very large problems (tens of thousands or more variables) where the first-order derivatives are available or are relatively cheap to estimate.

Implementations of first-order methods not only are ubiquitous and have widespread use, but they have also demonstrated to endure the challenges of ever-growing problems sizes imposed by industry. Most notable are applications in statistics, e.g. parameter calibration and nonlinear model regression, amongst many others. First-order methods and the conjugate gradient method have been a research subject for well over 50 years and continue to be improved.

Learn more [here](#).

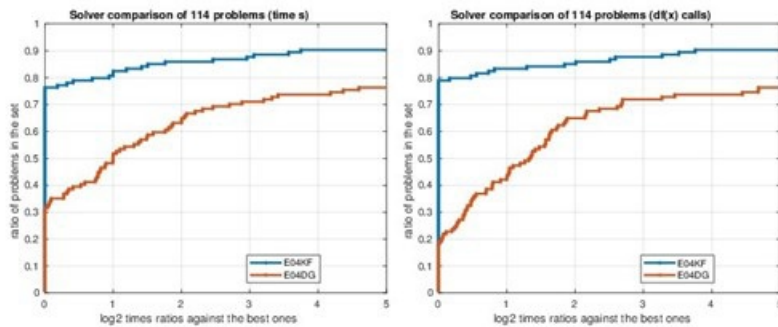


Figure 1: Performance profiles comparing solvers e04kf and e04dg over 114 CUTEst unconstrained NLP problems. Performance measures are: time (left) and number of gradient calls (right). For the time plot (left), the higher line indicates faster solver. For the right plot, the higher line represents fewer gradients calls.

NAG and Performance Optimisation and Productivity

NAG is a partner in the Performance Optimisation and Productivity Centre of Excellence (POP). POP was created with the aim of boosting the productivity of EU research and industry by providing free of charge services to advise on improving the performance of high performance computing (HPC) parallel software. Please [click here](#) to view a flyer.

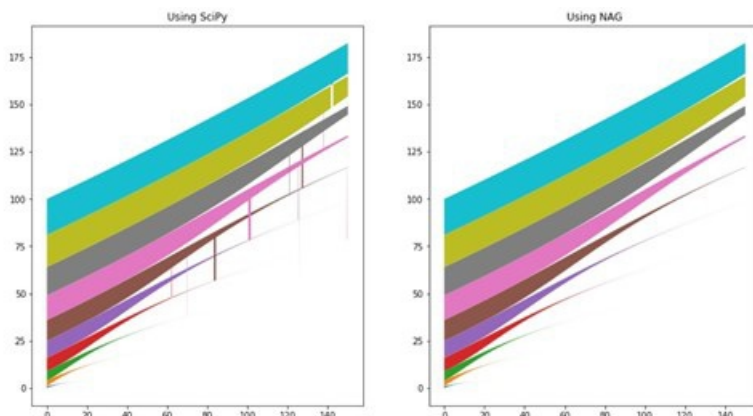
To find out more about the project, please visit <https://pop-coe.eu/>

Mathieu Functions on the NAG Library demonstrating NAG's commitment to accuracy

NAG introduced **Mathieu functions** to the NAG Library at its recent update (Mark 27). Mathieu functions have a range of applications in the solution of problems involving elliptic structures including propagation within elliptical waveguides, the physics of capacitor microphones and scattering from dielectric elliptical cylinders.

Computing Mathieu functions accurately can be difficult and there are many papers on the subject. Here is a demonstration, taken from a [StackOverflow question](#), showing how Python's SciPy implementation occasionally struggles.

The NAG implementation computes the correct results as shown in the plot below:



Learn more about this work on [GitHub](#), and for the NAG Library Mathieu function routine documentation [click here](#).

Terms and Conditions

Licensor: The Numerical Algorithms Group Ltd, registered in England and Wales (company number 1249803), whose registered office is 30 St Giles, Oxford, OX1 3LE.

The Chest Order, together with the Licence Terms and Conditions, and any exceptions listed below, create a legally binding contract between your institution, organisation or company and the Licensor. Therefore please read the terms and conditions carefully and only submit a Chest Order if its terms and conditions are acceptable to your institution, organisation or company and you have the authority to make the financial commitment shown.

Licence Type

The Department and Site licences are subject to the terms and conditions for the [Standard Chest Licence for Software \(June 2011\)](#).

Payment Terms

Licences are of three or five years duration, commencing 1 August 2020. For sites placing orders after this date, prorating of Fees shall not apply except where the Order is to upgrade an existing Licence - in this instance please contact Chest Help.

Sites licensed until 31 July 2023 can extend their licence for a further two years from 1 August 2023 to 31 July 2025.

For the subsequent years, Sites will be invoiced three months in advance of the anniversary date of this Agreement (1 May or 1 February for "Early Bird" sites).

Chest is an Enterprise of Jisc. All Purchase orders must be made out to Jisc Services Ltd, 4 Portwall Lane, Bristol, BS1 6NB to cover all charges plus VAT.

All terms contained in a PO are expressly rejected and do not form part of the Licence or vary the Licence terms in any way.

Payments are due within thirty days of invoice date; recipients of late payments are entitled to interest in accordance with **UK statutory provisions**.

Termination Clauses

At the end of the Licence Period, unless a further Licence Period is entered into, Licensee must cease all use of the Licensed Product and de-install and destroy all copies in its possession.

Location and Use Permissions

The product(s) may be used by any Authorised User of the Licensee for Educational Purposes which includes the administration and management of the licensee's educational and research operations. These permissions are described in the terms and conditions for the Standard Chest Licence for Software.

Students	Yes
Academic Staff	Yes
Non-Academic Staff	Yes
Administration and management	Yes
Staff home use rights	Yes
Student home use rights	Yes
Installation on Hosted Server	No

Personal Licences

Home use licences are included for all staff and students.

Products and Pricing

- Prices are in GBP and exclude VAT.
- Pricing is based on a per operating system model.
- Sites can choose to pay their licence fee annually or as a one-off fee.
- Sites can choose a three or five-year licence

There are three tables below, as follows:

- The first (NAG Options) allows you to tell us if you are ordering a two-year extension for your current three-year licence, choosing a Department licence instead of a campus licence, and if you are opting in to the Early Bird initiative. You do not need to tick any of these boxes if they are not relevant*.
- The second (Operating Systems) allows you to tell us which OS you are ordering for. The number of OS you select here must correspond with the number in the product you order. Unless you are purchasing for all OS, you must tick the relevant boxes here.
- The third (Product and Pricing) allows you to select the product you require. Use the filters to help narrow the list down to what you are looking for.

*Explanations of the second and third of these points can be found at the bottom of this page.

Payment terms and conditions are shown on the Terms and Conditions tab

If you prefer you can download and complete a [pdf version of the Order Form](#) and return it by email to [Chest Help](#).

NAG Options

If you wish to extend your existing three-year licence by two years, please select the appropriate tick box below. Sites with existing three year licences have been emailed with new pricing information which will be applied at checkout.

If you are a new site wanting to purchase a licence from 16 January 2023 please contact help@chest.ac.uk for pricing information.

If you wish to take advantage of the Early Bird initiative or are purchasing a department licence, please tick the appropriate box below before going on to order your licence in the table that follows. Please note, all orders for Early Bird must be received by 31 March, and all payments must be received by 30 April.

Product Name	Price
2-Year Extension for Existing 3-Year Licence Holders	tba
Department Option - Discounts applied	tba
Early Bird Option - up to 31 March 2023 - 5% Discount	tba

You still need to select your OS and the product you wish to purchase from the following tables.

Operating Systems

If you are ordering for one Operating System, please only tick one of the following boxes, if you are ordering for two please only tick two and so on.

Operating System	Price
Linux	not applicable
Mac	not applicable
Solaris	not applicable
Windows	not applicable

Products

Please tick one of the below products. You can filter by Product, Number of Operating Systems, Term, Payment Terms.

The Gold packages include HPC Day(s), i.e. 1 day of HPC & Software Training per year to be provided by the Supplier to Licensees, included in the Fees. Please note that these days can be carried forward and that the provision of such courses is subject to trainer availability, with travel and subsistence costs chargeable.

Product Name	OS	Term	Payment	20/21 (£)	21/22 (£)	22/23 (£)	23/24 (£)	24/25 (£)
Compiler	1	3 Years	Annual	1,660	1,660	1,660	-	-
Compiler	1	5 Years	Annual	1,530	1,530	1,530	1,530	1,530
Compiler	2	3 Years	Annual	2,690	2,690	2,690	-	-
Compiler	2	5 Years	Annual	2,510	2,510	2,510	2,510	2,510
Compiler	All	3 Years	Annual	3,000	3,000	3,000	-	-
Compiler	All	5 Years	Annual	2,840	2,840	2,840	2,840	2,840
Compiler & Library	1	3 Years	Annual	5,070	5,070	5,070	-	-
Compiler & Library	1	5 Years	Annual	4,470	4,470	4,470	4,470	4,470
Compiler & Library	2	3 Years	Annual	7,250	7,250	7,250	-	-
Compiler & Library	2	5 Years	Annual	6,760	6,760	6,760	6,760	6,760
Compiler & Library	3	3 Years	Annual	9,630	9,630	9,630	-	-
Compiler & Library	3	5 Years	Annual	8,940	8,940	8,940	8,940	8,940
Compiler & Library	All	3 Years	Annual	11,800	11,800	11,800	-	-
Compiler & Library	All	5 Years	Annual	11,120	11,120	11,120	11,120	11,120
Compiler & Library Gold	1	3 Years	Annual	6,020	6,020	6,020	-	-
Compiler & Library Gold	1	5 Years	Annual	5,420	5,420	5,420	5,420	5,420
Compiler & Library Gold	2	3 Years	Annual	8,200	8,200	8,200	-	-
Compiler & Library Gold	2	5 Years	Annual	7,710	7,710	7,710	7,710	7,710
Compiler & Library Gold	3	3 Years	Annual	10,580	10,580	10,580	-	-
Compiler & Library Gold	3	5 Years	Annual	9,890	9,890	9,890	9,890	9,890
Compiler & Library Gold	All	3 Years	Annual	13,700	13,700	13,700	-	-
Compiler & Library Gold	All	5 Years	Annual	13,020	13,020	13,020	13,020	13,020
Complier Gold	1	3 Years	Annual	2,610	2,610	2,610	-	-
Complier Gold	1	5 Years	Annual	2,480	2,480	2,480	2,480	2,480
Complier Gold	2	3 Years	Annual	3,640	3,640	3,640	-	-
Complier Gold	2	5 Years	Annual	3,460	3,460	3,460	3,460	3,460
Complier Gold	All	3 Years	Annual	3,950	3,950	3,950	-	-

Product Name	OS	Term	Payment	20/21 (£)	21/22 (£)	22/23 (£)	23/24 (£)	24/25 (£)
Complier Gold	All	5 Years	Annual	3,790	3,790	3,790	3,790	3,790
Library	1	3 Years	Annual	4,040	4,040	4,040	-	-
Library	1	5 Years	Annual	3,710	3,710	3,710	3,710	3,710
Library	2	3 Years	Annual	6,000	6,000	6,000	-	-
Library	2	5 Years	Annual	5,670	5,670	5,670	5,670	5,670
Library	3	3 Years	Annual	8,070	8,070	8,070	-	-
Library	3	5 Years	Annual	7,520	7,520	7,520	7,520	7,520
Library	All	3 Years	Annual	9,940	9,940	9,940	-	-
Library	All	5 Years	Annual	9,270	9,270	9,270	9,270	9,270
Library Gold	1	3 Years	Annual	4,990	4,990	4,990	-	-
Library Gold	1	5 Years	Annual	4,660	4,660	4,660	4,660	4,660
Library Gold	2	3 Years	Annual	6,950	6,950	6,950	-	-
Library Gold	2	5 Years	Annual	6,620	6,620	6,620	6,620	6,620
Library Gold	3	3 Years	Annual	9,620	9,620	9,620	-	-
Library Gold	3	5 Years	Annual	8,470	8,470	8,470	8,470	8,470
Library Gold	All	3 Years	Annual	11,840	11,840	11,840	-	-
Library Gold	All	5 Years	Annual	11,170	11,170	11,170	11,170	11,170
Compiler	1	3 Years	One-off	4,640	-	-	-	-
Compiler	1	5 Years	One-off	6,890	-	-	-	-
Compiler	2	3 Years	One-off	7,540	-	-	-	-
Compiler	2	5 Years	One-off	11,300	-	-	-	-
Compiler	All	3 Years	One-off	8,410	-	-	-	-
Compiler	All	5 Years	One-off	12,780	-	-	-	-
Compiler & Library	1	3 Years	One-off	14,200	-	-	-	-
Compiler & Library	1	5 Years	One-off	20,120	-	-	-	-
Compiler & Library	2	3 Years	One-off	20,290	-	-	-	-
Compiler & Library	2	5 Years	One-off	30,420	-	-	-	-
Compiler & Library	3	3 Years	One-off	26,960	-	-	-	-
Compiler & Library	3	5 Years	One-off	40,230	-	-	-	-
Compiler & Library	All	3 Years	One-off	33,040	-	-	-	-
Compiler & Library	All	5 Years	One-off	50,040	-	-	-	-

Product Name	OS	Term	Payment	20/21 (£)	21/22 (£)	22/23 (£)	23/24 (£)	24/25 (£)
Compiler & Library Gold	1	3 Years	One-off	17,050	-	-	-	-
Compiler & Library Gold	1	5 Years	One-off	24,870	-	-	-	-
Compiler & Library Gold	2	3 Years	One-off	23,140	-	-	-	-
Compiler & Library Gold	2	5 Years	One-off	35,170	-	-	-	-
Compiler & Library Gold	3	3 Years	One-off	29,810	-	-	-	-
Compiler & Library Gold	3	5 Years	One-off	44,980	-	-	-	-
Compiler & Library Gold	All	3 Years	One-off	38,740	-	-	-	-
Compiler & Library Gold	All	5 Years	One-off	59,540	-	-	-	-
Complier Gold	1	3 Years	One-off	7,490	-	-	-	-
Complier Gold	1	5 Years	One-off	11,640	-	-	-	-
Complier Gold	2	3 Years	One-off	10,390	-	-	-	-
Complier Gold	2	5 Years	One-off	16,050	-	-	-	-
Complier Gold	All	3 Years	One-off	11,260	-	-	-	-
Complier Gold	All	5 Years	One-off	17,530	-	-	-	-
Library	1	3 Years	One-off	11,310	-	-	-	-
Library	1	5 Years	One-off	16,700	-	-	-	-
Library	2	3 Years	One-off	16,810	-	-	-	-
Library	2	5 Years	One-off	25,520	-	-	-	-
Library	3	3 Years	One-off	22,610	-	-	-	-
Library	3	5 Years	One-off	33,840	-	-	-	-
Library	All	3 Years	One-off	27,830	-	-	-	-
Library	All	5 Years	One-off	41,720	-	-	-	-
Library Gold	1	3 Years	One-off	14,160	-	-	-	-
Library Gold	1	5 Years	One-off	21,450	-	-	-	-
Library Gold	2	3 Years	One-off	19,660	-	-	-	-
Library Gold	2	5 Years	One-off	30,270	-	-	-	-
Library Gold	3	3 Years	One-off	25,460	-	-	-	-
Library Gold	3	5 Years	One-off	38,590	-	-	-	-
Library Gold	All	3 Years	One-off	33,530	-	-	-	-
Library Gold	All	5 Years	One-off	51,220	-	-	-	-

Department Licences

Institutions may choose to purchase a Department rather than a Site Licence by ticking the Department Option - Discounts applied box:

- **A single operating system** Department Licence is 60% of the single operating system Site Licence fee
- **Two or more operating systems** Department Licence is 50% of the relevant multi-operating system Site Licence fee

Early Bird

The Early Bird initiative allows sites to enjoy 5% off these prices, subject to them submitting their initial order by the 31 March and payment being received by Jisc by the 30 April. In future years Early Bird sites will be invoiced in February and payment must be received by 30 April, otherwise sites will be re-invoiced for the full (non Early Bird) price

Operating Systems

When ordering your product you will select the number of Operating Systems you require. Please use the Operating Systems table to select the specific Operating Systems you are ordering for. Please be sure the number you select in the OS table corresponds with the number in your product order.

Commercial in confidence

Operating address: Chest (a Jisc Enterprise), 4 Portwall Lane, Bristol. BS1 6NB email:help@chest.ac.uk tel:0300 121 0878

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