



# INVITATION TO TENDER

## ECMWF/ITT/2024/366

### Licensing and Support of IBM High-Performance Storage System (HPSS)

#### Volume II:

### Specification of Requirements

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# 1. Background

## 1.1. Introduction

This Invitation to Tender (ITT) has been prepared by the European Centre for Medium-Range Weather Forecasts, (governed by its Convention and associated Protocol on Privileges and Immunities which came into force on 1 November 1975, and was amended on 6 June 2010) ("ECMWF") for the purposes of obtaining proposals from Tenderers for licensing and support services for the ECMWF IBM High-Performance Storage System (HPSS) and related consultancy services.

## 1.2. ECMWF Data Centre

ECMWF has one of the largest IT data storage facilities in the world comprising its main Data Handling System, which primarily stores observational data and data generated by its High-Performance Computer system, and various ancillary storage systems including network attached storage. The equipment is currently from diverse manufacturers, including but not limited to Brocade, Dell, HPE, IBM, NetApp, Spectra Logic and Western Digital.

### ECMWF's HPC Facility

ECMWF's High Performance Computing Facility is based on an Atos Sequana XH2000 based service. These are used to run large mathematical models allowing the Centre to predict the weather worldwide over periods of several weeks.

### ECMWF's Storage Systems

ECMWF maintains a large database of weather-related information. The Data Handling System (DHS) currently holds around an exabyte of data, the bulk of it being pre-compressed and scientific in nature. This data is stored in a tiered environment controlled by the High Performance Storage System (HPSS). Most data are stored on tape media, with only 4% of the data residing on disk. HPSS is highly distributed software, making use of many servers to transfer data between disks or tape drives and users archiving or accessing the archives, via a high-performance network.

HPSS is a high-performance, hierarchical storage management software solution offered by IBM Consulting. HPSS was developed jointly by IBM and several US Government sponsored laboratories, with IBM Consulting having rights to license HPSS and provide related services.

From the user viewpoint the DHS supports two main applications developed by ECMWF to hide the complexities of the underlying storage management from users:

- MARS, the Meteorological Archival and Retrieval System, provides access to a powerful abstraction engine that allows the thousands of registered users to access the meteorological data that has been collected or generated at ECMWF for almost 40 years. MARS stores GRIB and BUFR data, hiding from its users all of the details concerning the physical location and internal organisation of this data. It manages its own set of disk caches for staging data that has been recently acquired, generated or accessed.
- ECFS provides users with a logical view of a seemingly very large file system and is used for data that is not suitable for storing in MARS. UNIX-like commands enable users to copy whole files to and from any of ECMWF's computing platforms.

MARS data represents about 70% of the volume of data stored in the DHS, with ECFS representing the remaining 30%. In a typical day the archive grows by about 500 TB.

## 2. Scope of the ITT

### 2.1. Objective

This ITT is expected to result in the setting up of a contract to license and support HPSS for the period between and including 2025 to 2029, with the possibility of extension. The support must include:

- the right for ECMWF to continue to operate one Operational Instance of HPSS,
- three Maintenance Instances of HPSS
- ongoing support for day to day and critical issues.
- access to IBM HPSS Support in Houston, U.S.

and ideally include priced options for remote or onsite consultancy to support major upgrades.

The software will be running on equipment installed in the ECMWF data centre, at:

ECMWF  
Tecnopolo di Bologna,  
Via Stalingrado 84/3,  
40128 Bologna,  
Italy

The contract award is subject to approval by ECMWF's governing body, its Council, which meets in June or December 2024.

Tenders are welcomed from suppliers based in any country (subject to supply and support requirements).

### 2.2. Evaluation Method and Selection Criteria

Tenders will be evaluated based on the evaluation criteria and weights shown in the table below.

| <b>Evaluation criteria</b>   | <b>Weight</b> |
|--|---------------|
| Tenderer's Credentials <ul style="list-style-type: none"><li>- Financial standing and Legal organization</li><li>- Track record and references</li></ul>   | 10%           |
| Quality of Proposal <ul style="list-style-type: none"><li>- Level and depth of experience with HPSS</li><li>- Approach to providing standard and critical issue support</li><li>- Ability to provide consultancy support</li></ul> | 30%           |
| Pricing and Payment Mechanism <ul style="list-style-type: none"><li>- Prices quoted for the annual support</li><li>- Level of price guarantees through the entire contract</li><li>- Prices of consultancy support</li></ul>       | 60%           |

*Table 1: Evaluation Criteria*

Tenderers must achieve a mark of at least satisfactory (i.e. 60%) for each high-level criterion. The award will be made to the Tenderer which obtains the highest overall score following the evaluation.

Following notification of the result of your tender you may request feedback on the evaluation from ECMWF.

## 3. Specification of Requirements

### 3.1. HPSS licensing

ECMWF holds a very large volume of data in its archive and migrating to a different product would be a multi-year effort, therefore it is of great importance that the tenderer can commit to licensing and supporting HPSS for the full period as specified in Section 3.7 below. Tenderers should explain what commitments they are able to give over the continued support for HPSS.

Tenderers will need to work with a local representative of IBM to obtain the license. The terms and conditions of the HPSS license will be agreed as part of and will need to be aligned with the contract between ECMWF and the Tenderer.

The license fee should be payable either annually or quarterly. To assist ECMWF with future planning ideally the cost of support for each year in this period would be fixed as part of the proposal. Section 3.6 below is applicable also to the license fees.

Tenderers are asked to explain any constraints and the costs involved if ECMWF wished to extend the operational instance to a second site, for example to facilitate a disaster recovery copy.

### 3.2. HPSS standard support

Tenderers are requested to provide remote standard support for HPSS with the following functions:

1. Support of HPSS software including relevant components of DB2,
  - a. Provide fixes for software defects,
  - b. Provide patches and enhancements for HPSS
2. Help with problems, upgrades, planning, status, questions
3. Problem reporting, determination, and resolution,
4. Status telecons as mutually agreed
  - a. During the status telecons, review the state of the operational HPSS system and work with ECMWF to provide early identification of problems before they become severe.
5. Configuration reviews for significant upgrades,
6. Analysis of the HPSS configuration to optimise system performance.

Provide proactive support as follows:

1. Assign a person to be the primary contact and support representative to ECMWF.
2. Provide remote monitoring by logging on to the HPSS system and checking status and settings. This monitoring will be for the purposes of problem resolution.
3. Review ECMWF plans for changes in processors, network interfaces, storage devices, and HPSS configuration for impact on system stability and participate in configuration reviews.
4. Review current listings, as needed from HPSS configuration and performance reporting utilities.
5. Work with ECMWF to plan upgrades to new HPSS releases as they are issued and assist with the installation.
6. Assist with the installation of HPSS service releases and minor releases that are appropriate for ECMWF's configuration.

The problem resolution method should consist of the following:

1. Respond to problem reports submitted by ECMWF or potential problems identified within two hours of receipt.
2. Log onto the ECMWF system and investigate problems in depth.
3. Recommend and implement or help implement changes that will restore the system to useful operational service, including a change in procedure or recommend the move to a more current version of software levels, including prerequisites, to provide a fix.

4. Provide fixes for mission-critical software defects.

Tenderers must describe their approach to providing the support, including:

- how incidents and issues are logged,
- requirements for information that needs to be provided to initiate a call, and how log and diagnostic information is gathered,
- which days and hours this standard support is available,
- types of calls dealt with by themselves, and which will be escalated,
- details of how an escalation will work,
- which days and hours this standard support is available, (see section 3.3),
- size and experience of their HPSS support team

### 3.3. HPSS critical issue support

The Tenderer is asked to provide 24x7 support for critical issues. Critical issues are limited to situations where, for example, the HPSS system is incapable of storing or retrieving user data through standard interfaces or has a major problem with data and metadata integrity. The priority in addressing severe problems with HPSS is to take corrective action so that the system is operational.

Temporary workarounds are an acceptable method of resolving severe problems, but work to finally resolve the issue must be started as a priority during the next standard support hours.

As part of the critical issue support the Tenderer should:

1. Provide remote telephone support twenty-four hours a day, seven days a week.
2. Respond to a service call and commence resolution of the problem within two hours. A response is defined to be a call back to the authorized caller who originally reported the problem.

Tenderers must describe their approach to providing the support, including:

- How incidents and issues are logged 24x7,
- types of calls dealt with by themselves, and which will be escalated,
- details of how an escalation will work,
- which days and hours this critical issue cover only will be provided (see section 3.2),
- Procedures for handing over calls to ensure continuity at the end of the support analysts working period,
- How the critical issues are passed to the standard support team.

### 3.4. IBM HPSS Support

ECMWF has the largest single instance of HPSS in the world and the system is highly active. The support can therefore be highly complex requiring the deepest knowledge of HPSS. Regardless of how the Tenderer intends to provide the standard and critical issue support, it is vital to ECMWF that an escalation route exists to discuss problems with the IBM HPSS support team in Houston. Tenderers should describe how their proposal enables this requirement.

### 3.5. Consultancy support

ECMWF expects to require assistance to plan and implement major system upgrades or configuration changes. Tenderers are requested to provide priced options for both on-site and remote support in 2025. The options should describe the experience and abilities of the consultants and include rates for a standard eight-hour day. On-site support will be at the ECMWF data centre in Italy. Remote support would be required from 09:00 to 17:00 Central European Time.

It is required that this support includes an option for this support to be provided by a member of the HPSS core team from Houston.

A need for similar consultancy is expected to be needed throughout the contract period. Tenderers are asked to provide a pricing mechanism for arranging future consultancy support.

### 3.6. Pricing mechanism

Tenderers must either provide fixed prices for the HPSS licensing, support and consultancy throughout the period or provide fixed prices for 2025 and explain the mechanism that will be used to derive future prices. The mechanism should include any inflation linked increases.

The prices shall be quoted either in Euro (€) or in Pound Sterling (£). For the purposes of comparison for this ITT prices will be converted into a single currency at a conversion rate to be established as the average ECB exchange rate for the calendar month prior to the closing date of this ITT.

### 3.7. Term of the License and the Support

Tenderers are asked to provide ECMWF with a license and support for the HPSS for the term from the 1st January 2025 until 31st December 2029. The Tenders are not expected to have an option for termination for convenience during this term.

Preferably the proposal should include options for ECMWF to terminate the license and/or the support within this term. If termination before 31st December 2029 would result in termination charges these must be fully explained.

The proposal should include options to extend the term beyond 31st December 2029. Tenderers should specify the notice period required to extend the support, the duration they are prepared to extend the support by and any limits on the number or length of any extensions.

### 3.8. Terms and conditions of the contract

The terms and conditions for this contract are provided in Volume IV of the ITT documentation. Tenderers are requested to confirm their acceptance of the terms and conditions by checking the corresponding box in Volume IIIA. Should any of the clauses in Volume IV pose difficulties, Tenderers should list such clauses and explain why they would impact their ability to deliver the services in this contract. A Tenderer's acceptance of these terms and conditions form part of the evaluation process and hence will contribute to the success of a Tenderer's bid. ECMWF will consider any issues that are raised in a Tenderer's response and may agree to changes in these terms and conditions. Requests for changes identified later in the process, which have not been identified here, may not be considered.

Please note that as a result of ECMWF's immunity from jurisdiction, any contract, including any sub-contract and any ensuing contract between ECMWF and a third party (e.g. maintenance/support/license agreements), resulting from this ITT must contain an arbitration clause which is offered by ECMWF to all contracting parties. Tenderers are requested to explicitly confirm their willingness and ability to comply with this requirement and describe their approach in ensuring that such contracts comply with the above requirement. Further information may be found at <https://www.ecmwf.int/en/about/suppliers> in the documents under "ECMWF's status: Arbitration and VAT".

## 4. Format of the Tender response

### 4.1. Presentation and Order of the Tender

The Tender response shall be presented as separate documents, which are to be uploaded to the respective question on the eProcurement Portal, as follows:

- Completed Volume IIIA (Template for Tenderers – Administrative Information);
- Completed Volume IIIB (Template for Tenderers – Response to Specification of Requirements);
- Attachments and Annexes, as requested in the Volume III documents.

Note that for any information that has been provided as part of the Tender, but not specifically requested by ECMWF, then ECMWF shall, at its sole discretion, decide whether to utilise that further information within its evaluation process.

#### 4.2. Volume IIIA

Volume IIIA (Template for Tenderers – Administrative Information), which can be found under the ITT Online Questionnaire should be completed for the following information:

- Details about your organisation:  
*Information on the legal, commercial or professional status of the Tenderer, as well as contact details of the person who can be contacted by ECMWF in relation to the Tender. The Tenderer should also attach a copy of the official Company Registration Document and provide complete and accurate information on the Tenderer's shareholding structure and, if applicable, full details of its parent organisations up to and including the ultimate parent organisation.*
- Economic and financial capacity:  
Financial information on your organisation to enable us to evaluate your financial status.
- Staff resources
- Experience and references
- Additional questions:  
*This section contains a set of questions which seek either information or confirmation from the Tenderer.*
- Confirmation of agreement to Volume IV of the ITT (Draft Contract).
  - o Please note that the HPSS license agreement will become part of the final contract and will need to be aligned with the terms and conditions of the contract.

#### 4.3. Volume IIIB

Volume IIIB (Template for Tenderers – Response to Specification of Requirements) shall contain the Tenderer's response to the requirements specified in Volume II. The document lists the requirements and provides a structure for the Tenderer's response. This is the minimum information requested; Tenderers can provide any additional information or documents as necessary. Some of the requirements make reference to various sections in Volume II and do not provide the full description of the requirement; Tenderers are advised to formulate their response based on the description of the requirement provided in the respective section of Volume II and touch upon all the elements described or requested therein.

ECMWF seeks focused responses, rather than responses which include a significant amount of standard marketing material. If you wish to include marketing material in your proposal documentation set, it should be provided as discrete documents and limited to only marketing material which is directly relevant to the response and marked as "Marketing Material", however ECMWF may, at its sole discretion, not evaluate any such marketing material.