

ROSETTA

ROSETTA Radio Science Investigations RSI

RSI DDS Retrieval Quick Start Guide

Issue: 1

Revision:2

Date: 02.11.2004

Document: ROS-RSI-IGM-TN-3108

MEX-MRS-IGM-TN-3031

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Document Change Record

Issue	Rev	Sec	Date	Changes	Author
Draft	0	all	17.12.02	All pages	BS
	1	all		All pages	After review, BS
	2	Cover	02.11.2004	Mex Filename added	CS

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ACRONYMS

DDS	Data Disposition System
FTP	File Transfer Protocol
G/S	Ground Station
IFMS	Intermediate Frequency Modulation System
MCS	Mission Control System
ONES	One-way single-frequency mode
RX	S-band Receiver
S/C	Spacecraft
S-TX	S-Band Transmitter
TWOD	Two-way dual-frequency mode
TWOS	Two-way single-frequency mode
XML	eXtensible Markup Language
X-TX	X-band Transmitter

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1 INTRODUCTION

1.1 SCOPE

This Document explains how to download radio science observation data from the DDS at ESOC.

1.2 REFERENCED DOCUMENTS

The following documents are referenced in this document, and may be referred to if more information is needed.

Reference Number	Title	Issue Number	Date
RO-ESC-PL-5305	DDS tests Plan with Principal Investigators	1	27.03.2002
DTOS-INFR-UM-1001-TOS-GCI	GDDS Operator User Manual	1.2	05.07.2002

1.3 DOCUMENT OVERVIEW

Section 2 describes how the incoming data will be archived.

Section 3 describes the logbook.

Section 4 describes how the incoming data will be processed.

Section 5 describes how to retrieve data from the MCS Archive.

2 FROM DATA RETRIEVAL TO DATA ARCHIVING

A central data storage system on a dedicated server is installed at the Institute of the RSI Principal investigator.

The data storage system consists of a PC running Free-BSD with a TBD filesystem on an internal level (TBD) RAID. (S)FTP-connectivity needs to be ensured for FTP-clients outside the PI institute firewall.

A sketch of the RSI data repository can be found in figure X.

Data retrieval shall work as follows:

1. Data retrieval

Data retrieved from the ESOC DDS (both 'pushed' and 'retrieved' data) are received in the "incoming" folder. This folder needs to be (S)FTP accessible by the Rosetta/MEX DDS. Data pushed automatically are deposited in the base directory. For manually requested data, the directories 'ros' and 'mex' have been created. An automatic messaging script scans the incoming directory for new files.

The folder 'incoming' is owned by user 'ddstest'. Its contents can only be deleted by the owner.

2. Data unpacking

After retrieval of the raw data files, their contents is extracted to the folder 'unpacked'. For untaring the file contents, an automated script is provided which also unzips zcat contents. Manual sorting of files with different contents is mandatory. Unpacked files can be compared to the contents of the 'incoming' folder using an automated script.

3. Data sorting

Directories for data processing are created for each tracking pass. These shall be named in a unified way. Directory names shall follow the convention

MMM-yyyymmdd-hh, where

MMM is a 3-digit Mission identifier (ROS for Rosetta, MEX for Mars Express),
yyyy is the year, mm the month,
dd the day and hh the hour of the first received datafile timestamp.

Raw data shall be deposited in the 'wrk' subdirectory. Raw data files will be renamed according to the RSI filenames convention and copied to the 'level1a' directory. The name of the original data file shall be included in the file header.

Raw data processing from level 1a to level 1b and level 2 will be done automatically. Files shall be stored in the respective subdirectories. Upon completion of processing, the processing software shall create a file named 'STATUS' in the 'wrk' directory. The contents of this file shall consist of one string, depending on the success of the processing:

- a. 'OK' for successful data processing
- b. 'ERROR' for a failure in the processing procedure.

4. CD image preprocessing

An automated procedure shall search the tracking pass directories for the existence of the 'STATUS' file and examine its contents in regular interval and report the names of tracking pass directories with a present 'STATUS' file and its contents in a tbd manner, i.e. write to file, write to motd, send email to a tbd

user. The user will be able to identify any recently processed tracking passes and decide on the need to create a new archive CD-ROM.

5. CD image creation

Upon completion of data processing of a tracking pass, all data except the contents of the 'wrk' directory will be stored in a preliminary directory "CD-XXX". Here any available auxiliary data (stored in the aux-directory) will be added. Also, data required by the archive creation, validation and transfer plan will be added.

6. Database creation

A database of keywords will be created from the respective CD-directories. Results will be stored in the 'database' directory. An index file of all created CDs to the time of database creation will be stored in the CD-XXX directory.

File system structure

The folder '/raid0' is read/write accessible for all users in group 'radio' with the sticky bit set. This means that all users can write to the folder. However, files can only be deleted by their owners.

For data integrity reasons the following access permissions are set in '/raid0':

```
drwxrwxr-t 11 root    radio    512 Dec 3 13:55 .  
drwxr-xr-x  4 ddtest  ddtest  23552 Dec 3 10:09 incoming  
drwxrwxr-t  2 ddtest  radio    23552 Dec 3 13:56 trash  
drwxrwxr-t  3 ddtest  radio    1024 Dec 3 09:37 unpacked
```

Processing scripts

In the /usr/local/bin directory, a number of shell-scripts are provided. They are self-explanatory and included in this documentation. The scripts consist of:

'procdefs':

Variable definitions for the procedures

'report':

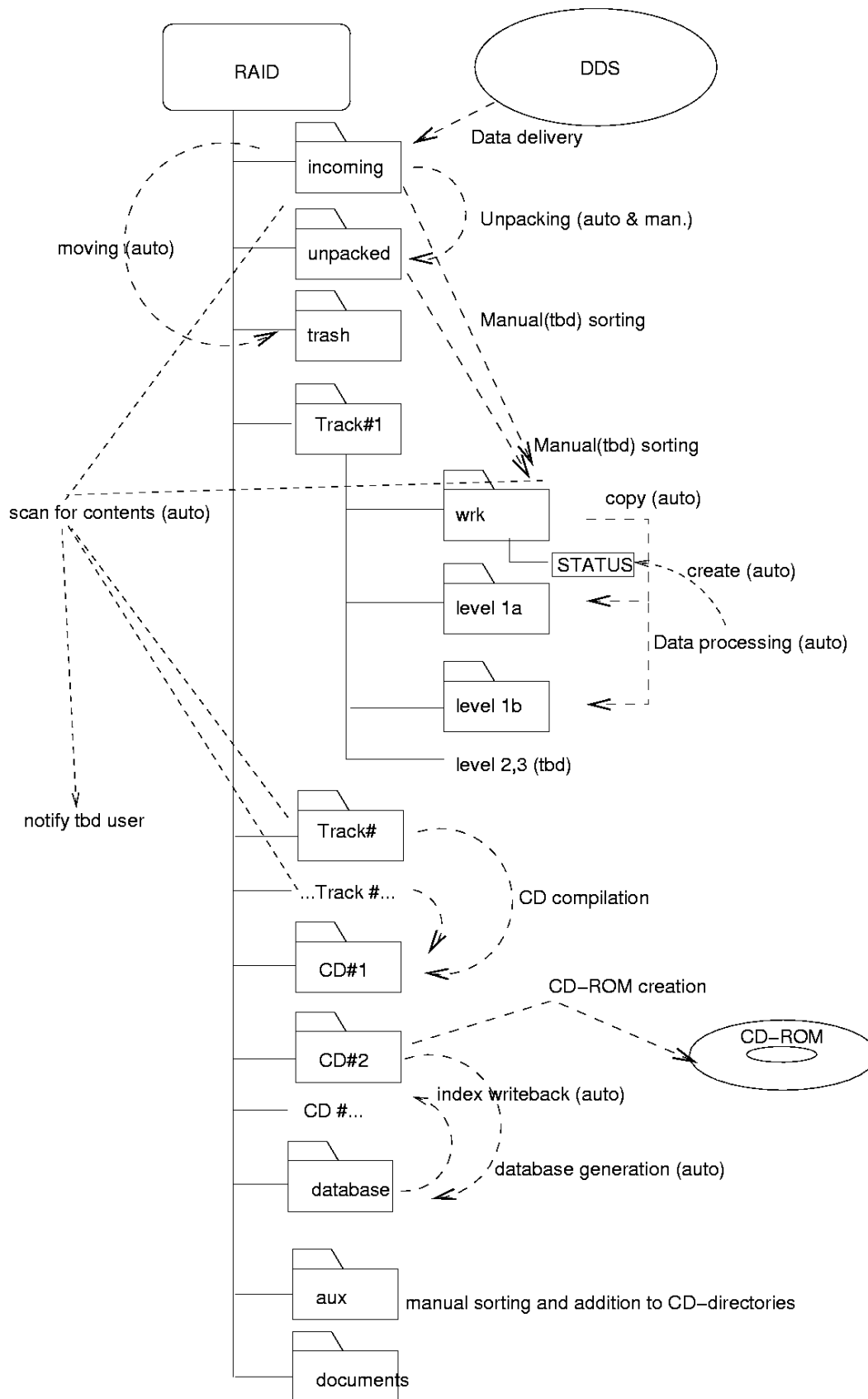
Shell-script to be called by 'ddtest' on cron basis, e.g. once per day. Reports changes to 'incoming' and gives status of directories with processed data. Includes automated mail-messaging. Upon execution by a user other than 'ddtest', names of temporary files are appended a 'whoami' ending to avoid overwriting of the original report file.

'unpack':

Unpacks files with tar contents to 'unpacked'. If the extracted files is gzipped, it is unzipped. Use of wildcards is permitted, but these need to be escaped with a backslash '\'.

'cleanup':

only to be called by user 'dds'! This script checks the tar contents of all files in 'incoming' and compares the result to the contents of 'unpacked'. If the file exists, the file in 'incoming' is moved to 'trash'. A logfile containing the file contents is deposited in unpacked/log. The log-file is appended a time-date string to allow tracking of errors.

RAID**Figure 1: The RAID**

3 THE LOGBOOK

The logbook should document, which user uses how the RAID.

date	user	acquired files	processed files	archived files	created volume ID	changed documents	comments
		directory + name	directory + name level	directory + name			

Figure 2: The Logbook

The user enlists first the adequate date and his name in the logbook. Then he charts the directories and the names of the acquired , processed and archived files, which volume ID he created and if there any changes in documents. If anything attracts attention to the user, he can write this down in the comments column.

4 WHERE THE DATA COMES FROM AND HOW IT WILL BE PROCESSED

4.1 DATA FROM THE ESOC

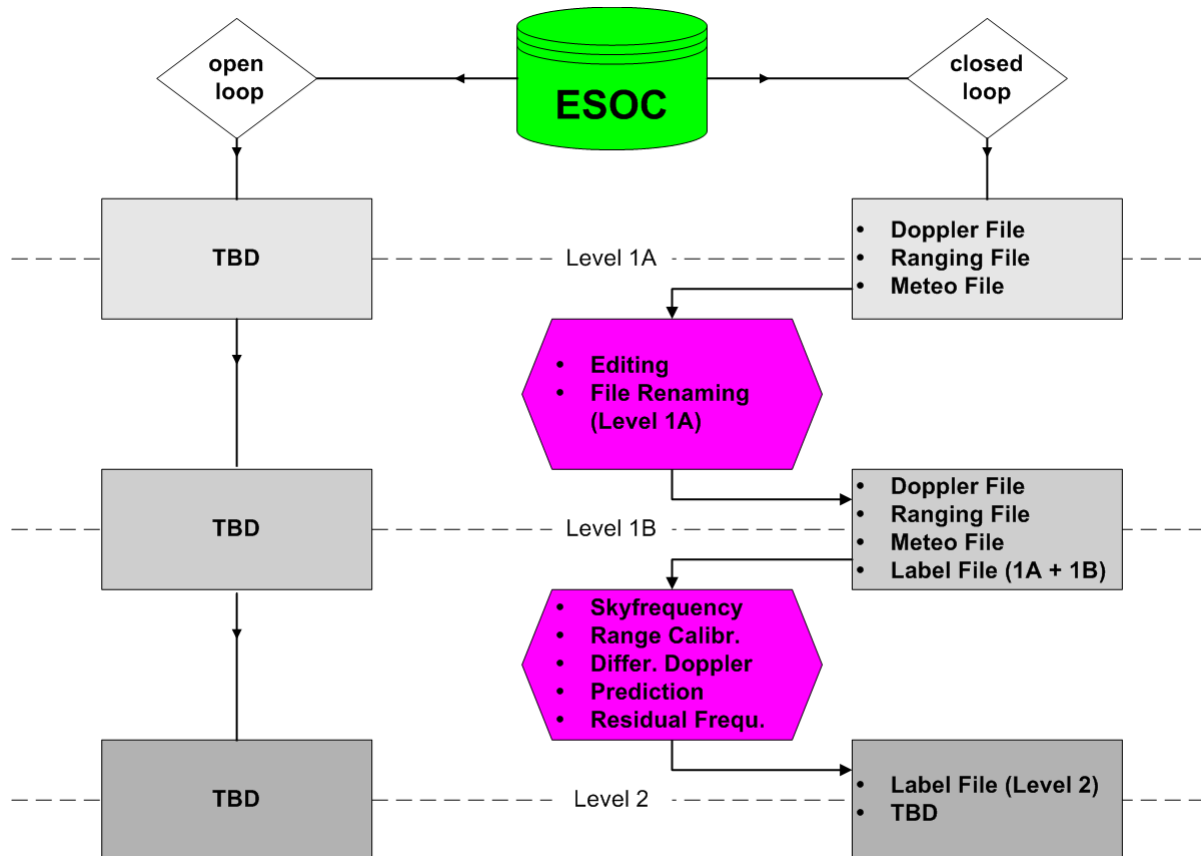


Figure 3: Data from ESOC

4.2 DATA FROM THE JPL

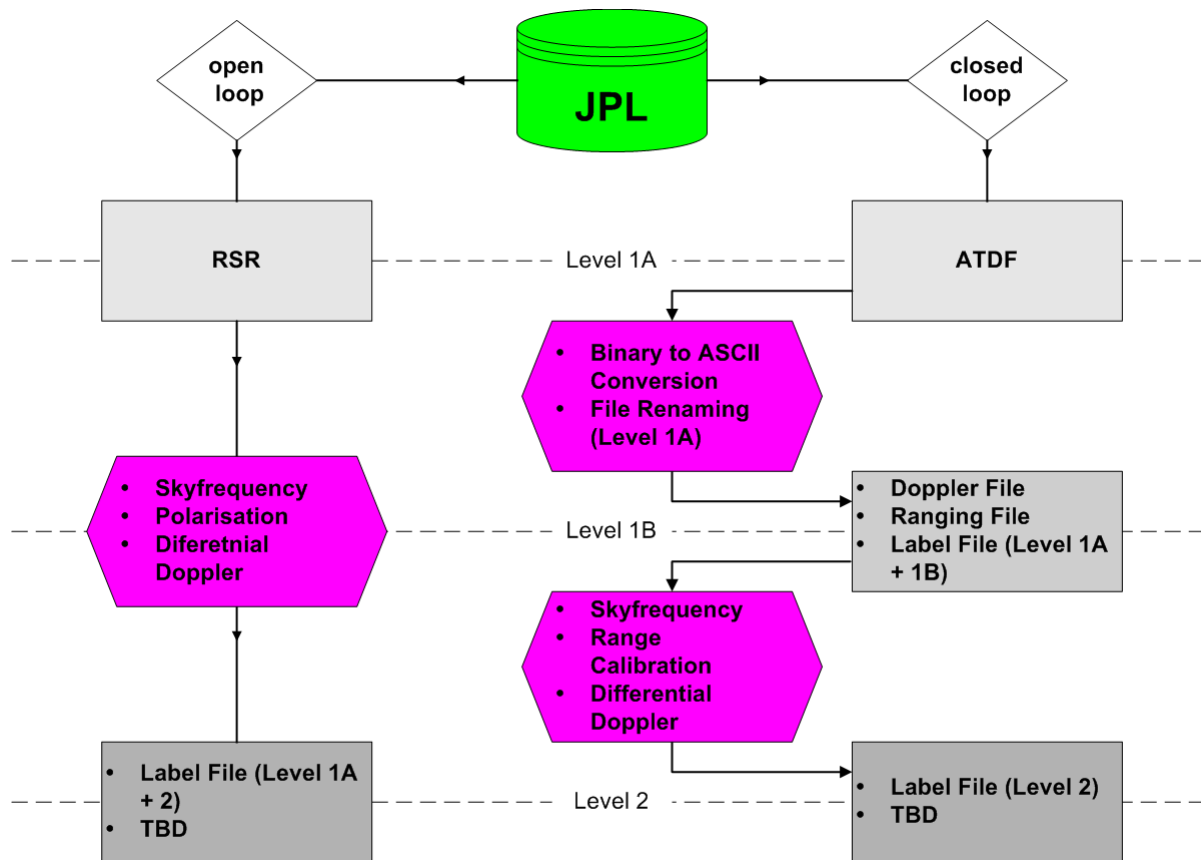


Figure 4: Data from JPL

5 RETRIEVING DATA FROM THE MCS ARCHIVE (FROM ESOC)

5.1 THREE METHODS OF RETRIEVING DATA

The three methods of retrieving data from the MCS archive are:

- via the WEB Interface
- via FTP(secure FTP)
- via the automatic data retrieval system (also called the DDS Scheduler)

5.1.1. Request Data via the Web Interface

How to use the WEB interface is described in the GDDS User Manual.

The login to the DDS homepage via the WEB interface on site <http://rodds.esa.int> will be made by the DDS account: "RO_RSI". The password for this DDS account is deposited in a marked envelope to the PI's and the Experiment Manager's discretion.

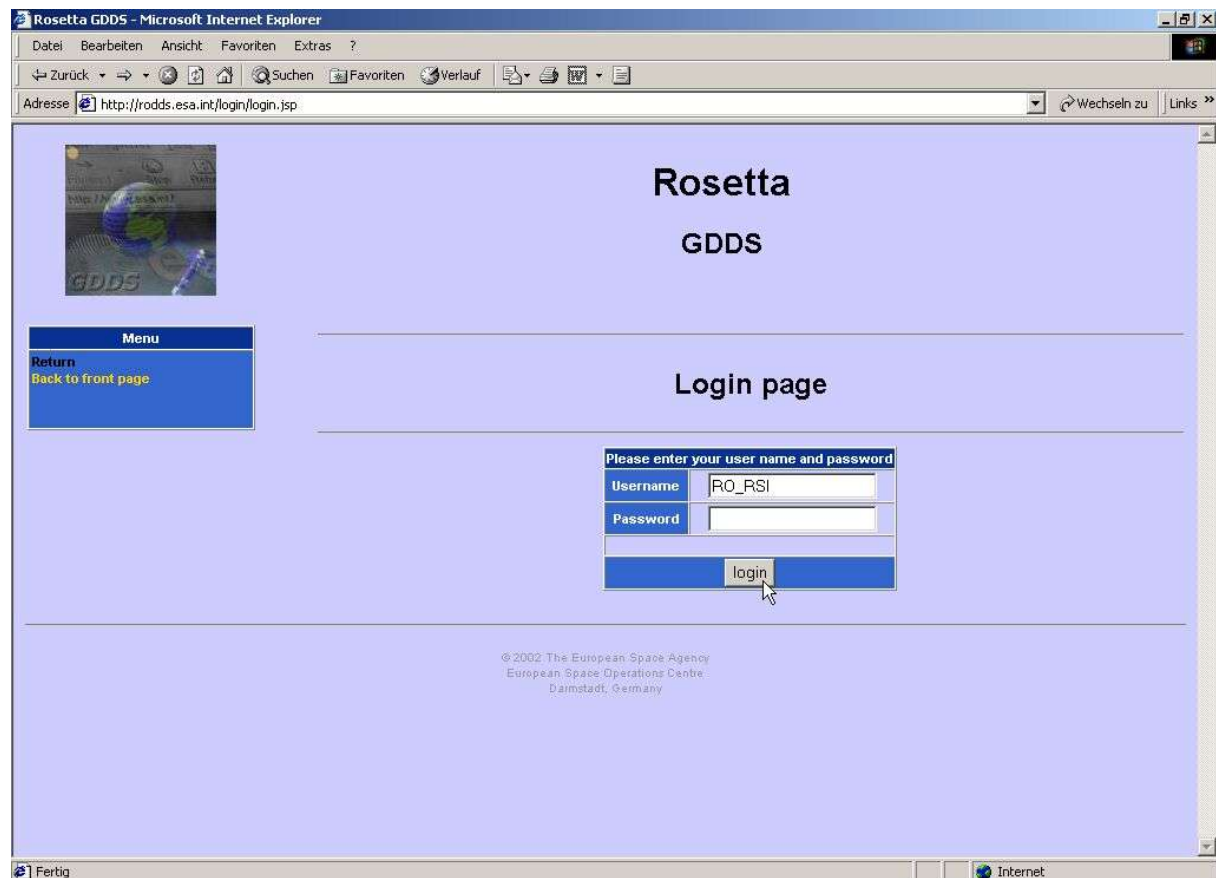


Figure 5: The Login-Page

Then the user enters the “Welcome RSI”-page:

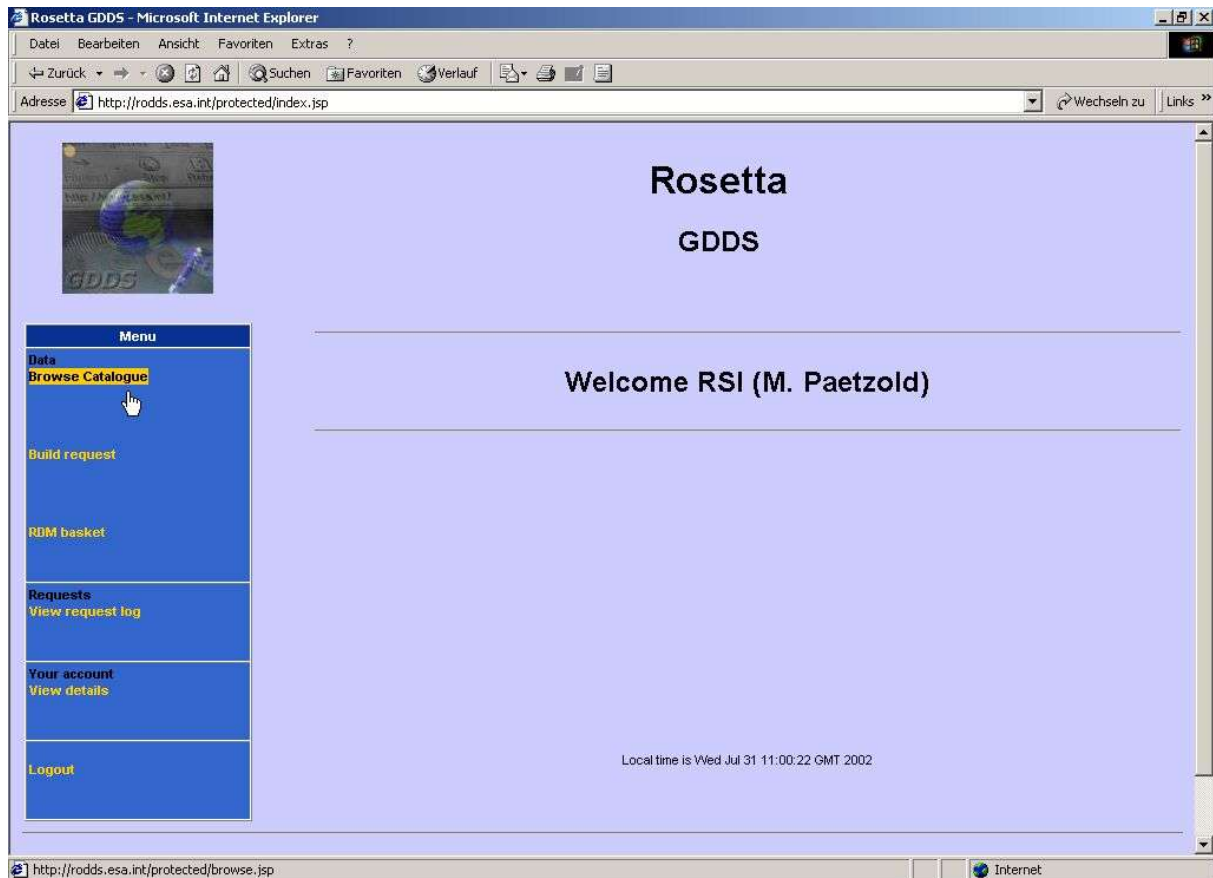
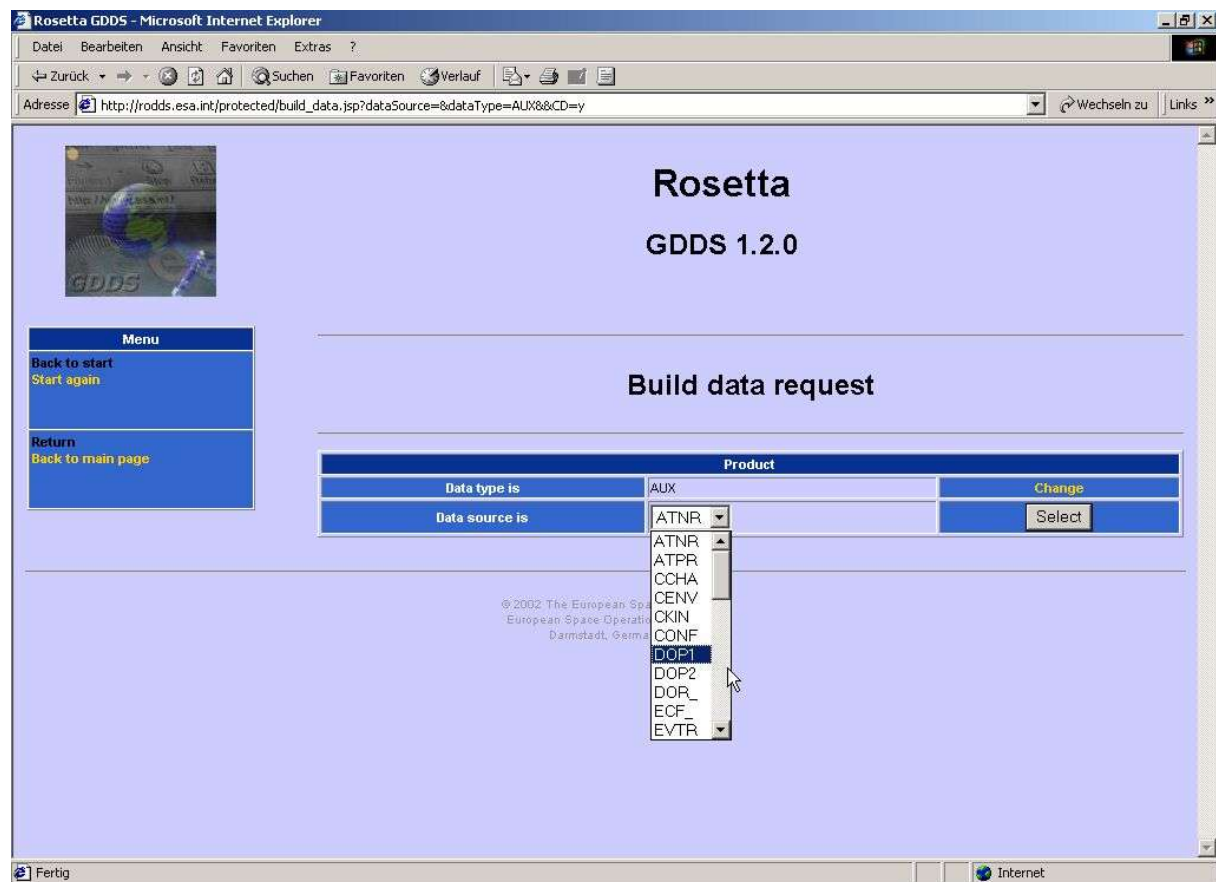


Figure 6: The Welcome-Page

Here the user has to click the button *Browse Catalogue*.

**Figure 7: Select Data source**

The user can now select which Data source he wants. For us *DOP1*, *DOP2* and *RNG* is important.

The screenshot shows a web browser window titled "Rosetta GDDS - Microsoft Internet Explorer". The address bar displays the URL: `http://rodds.esa.int/protected/build_data.jsp?CD=y&dataType=AUX&dataSource=DOP2`. The main content area is titled "Build data request" and contains several sections:

- Menu:** A sidebar on the left with links: "Back to start", "Start again", "Return", and "Back to main page".
- Product:** A table with two rows:

Product		
Data type is	AUX	Change
Data source is	DOP2	Change
- Options:** A table with two rows:

Options		
Compression	NONE	Change to NONE Set
SFDU	SFDU currently not required	Set
- Keywords:** A section with a dropdown menu labeled "MaxVolumeSize", an input field, and an [Add](#) button.
- Filter:** A section with an [Add filter](#) button.
- Action:** A section with a [Show me the XML](#) button and four buttons at the bottom: [On screen as hex](#), [On screen as text](#), [Via FTP](#), and [Add to RDM](#).

At the bottom of the page, there is a copyright notice: "© 2002 The European Space Agency, European Space Operations Centre, Darmstadt, Germany".

Figure 8: Build data request

If the user clicks *On screen as hex* or *On screen as text* the results for the example DOP2 is shown in the next figures:

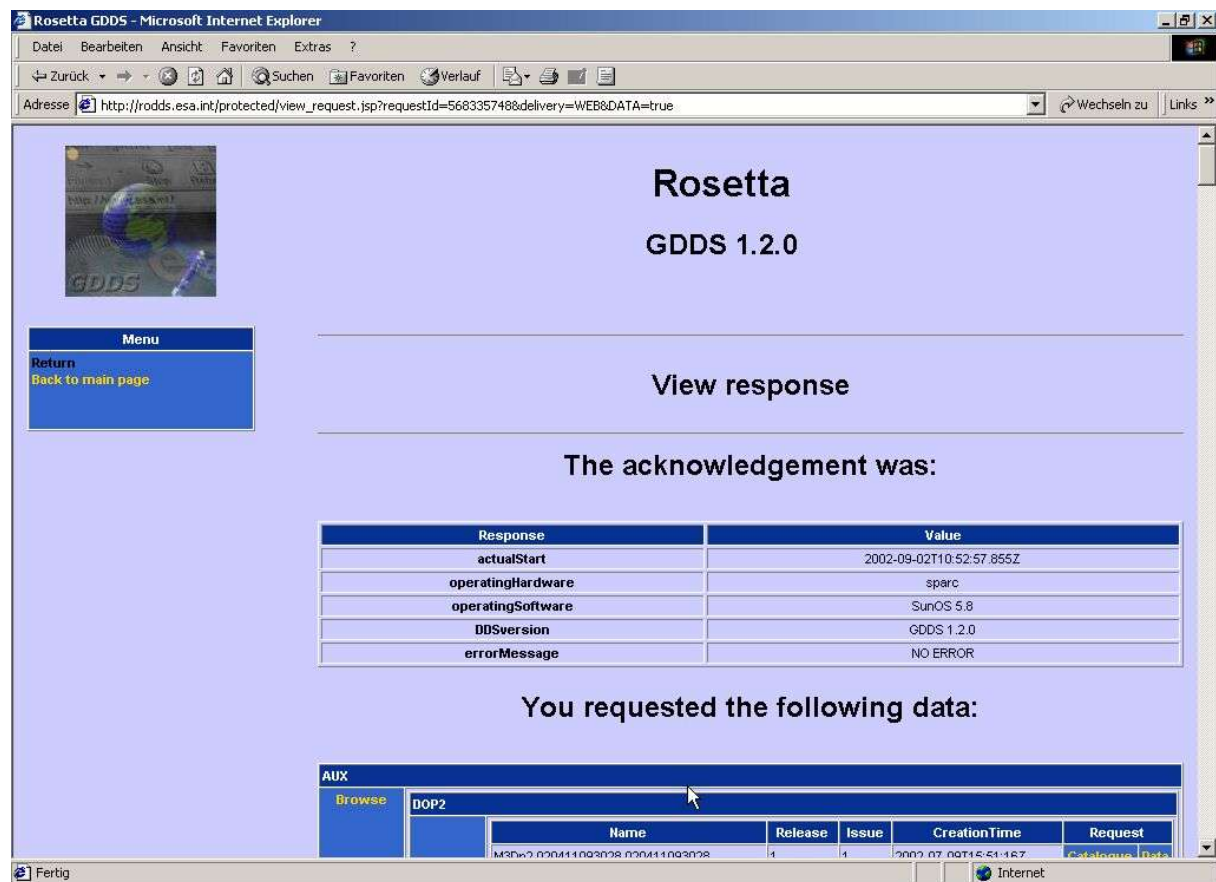


Figure 9: On Screen as hex

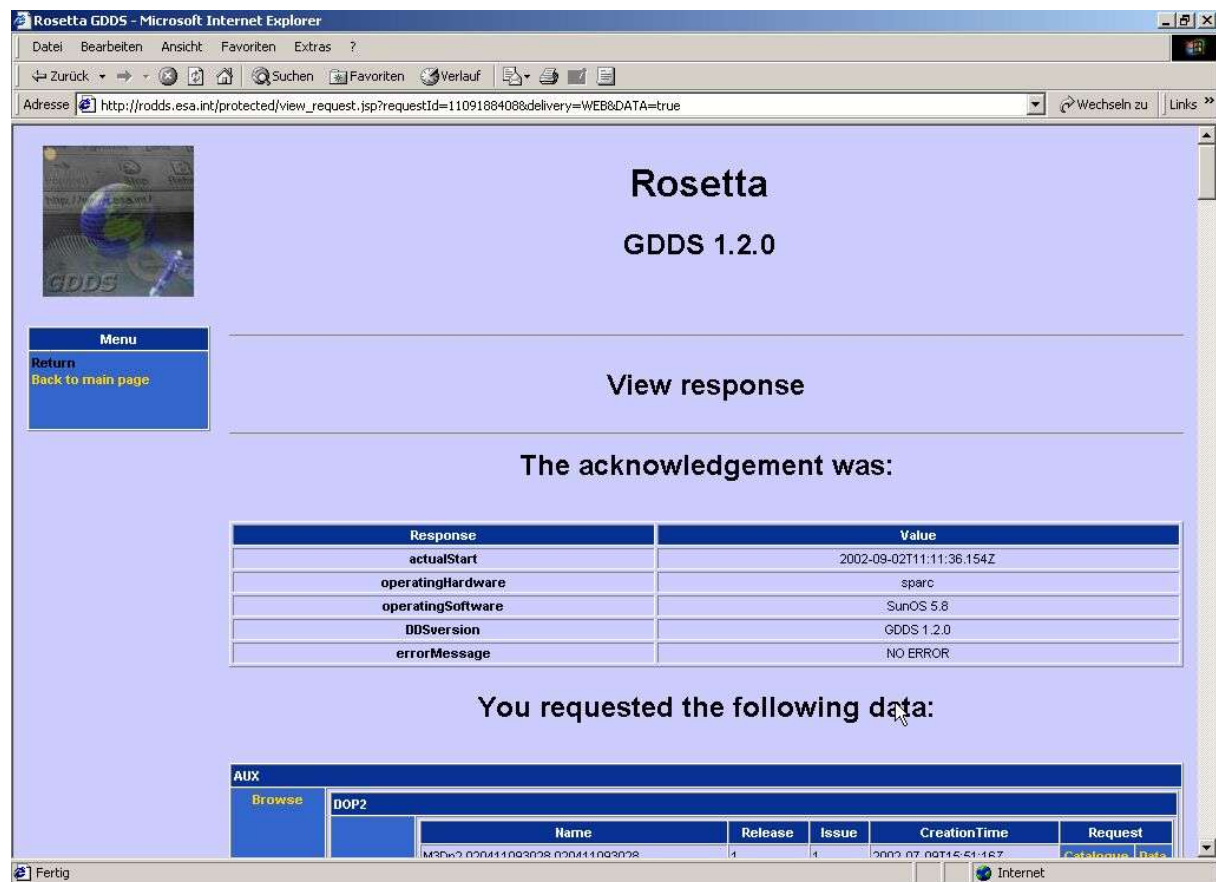


Figure 10: On screen as text

5.1.1.1. Returned Data displayed on the Web Browser

The user can display the Aux catalogue data through the WEB Interface, if he clicks on the *Catalogue Browsing* site the button *Browse*:

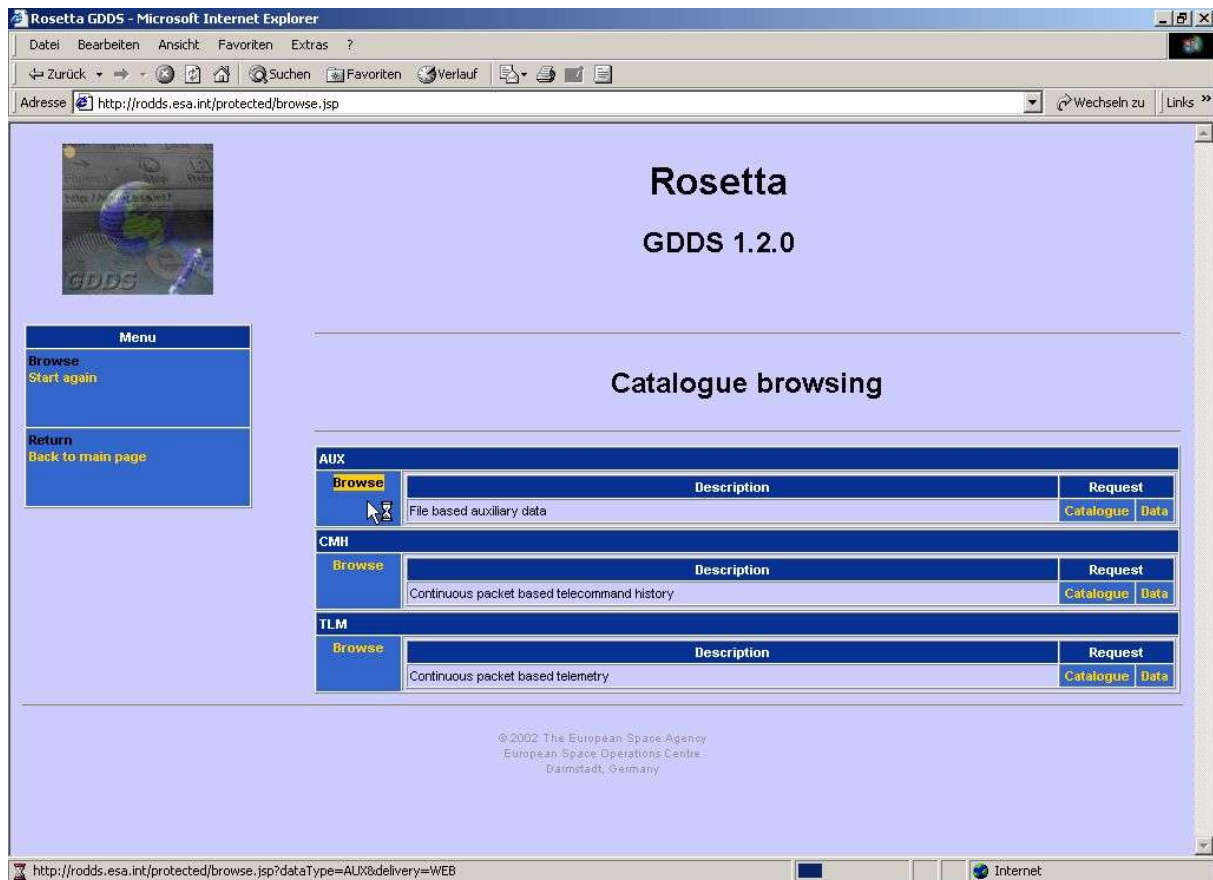


Figure 11: Catalogue browsing

On the next figure the result is shown and the user can also select the data from this catalogue

Rosetta GDDS - Microsoft Internet Explorer

Adresse <http://rodds.esa.int/protected/browse.jsp?dataType=AUX&delivery=WEB>

Catalogue browsing

AUX

Browse

Name	Release	Issue	CreationTime	Request
ATNR_FDLRMB_DAP030113121003_00000.ROS	2	1	2002-08-13T11:56:09Z	Catalogue Data
ATNR_FDLRMB_DAP030113121003_00000.ROS	1	1	2002-07-09T15:51:12Z	Catalogue Data
ATNR_FDLRMB_DAR030113121003_00000.ROS	2	1	2002-08-13T12:09:55Z	Catalogue Data
ATNR_FDLRMB_DAR030113121003_00000.ROS	1	1	2002-07-09T15:51:12Z	Catalogue Data
ATNR_FDRRMB_DAP030113121003_00000.ROS	1	1	2002-07-09T15:51:12Z	Catalogue Data
ATNR_FDRRMB_DAR030113121003_00000.ROS	1	1	2002-07-09T15:51:12Z	Catalogue Data
CRH_TEST.DAT	1	1	2002-07-11T10:53:46Z	Catalogue Data

ATPR

Name	Release	Issue	CreationTime	Request
ATPR_FDLRMB_DAP030113121003_00000.ROS	2	1	2002-08-13T12:10:55Z	Catalogue Data
ATPR_FDLRMB_DAP030113121003_00000.ROS	1	1	2002-07-09T15:51:12Z	Catalogue Data
ATPR_FDRRMB_DAP030113121003_00000.ROS	1	1	2002-07-09T15:51:12Z	Catalogue Data

CCHA

Name	Release	Issue	CreationTime	Request
CCHA_FDRRMB_DXXXXXXXXXXXXX_00000.ROS	1	1	2002-07-09T15:51:13Z	Catalogue Data

CENV

Name	Release	Issue	CreationTime	Request
CENV_FDRRMB_DXXXXXXXXXXXXX_00000.ROS	1	1	2002-07-09T15:51:13Z	Catalogue Data

CKIN

Name	Release	Issue	CreationTime	Request
CKIN_FDRRMB_DXXXXXXXXXXXXX_00000.ROS	1	1	2002-07-09T15:51:13Z	Catalogue Data

Internet

Figure 12: Catalogue

5.1.1.2. Returned Data transferred via FTP

Using the Web Browser, the user is able to transfer the data via ftp from DDS to Cologne:

The user can get the data, if he clicks the button *via FTP*:

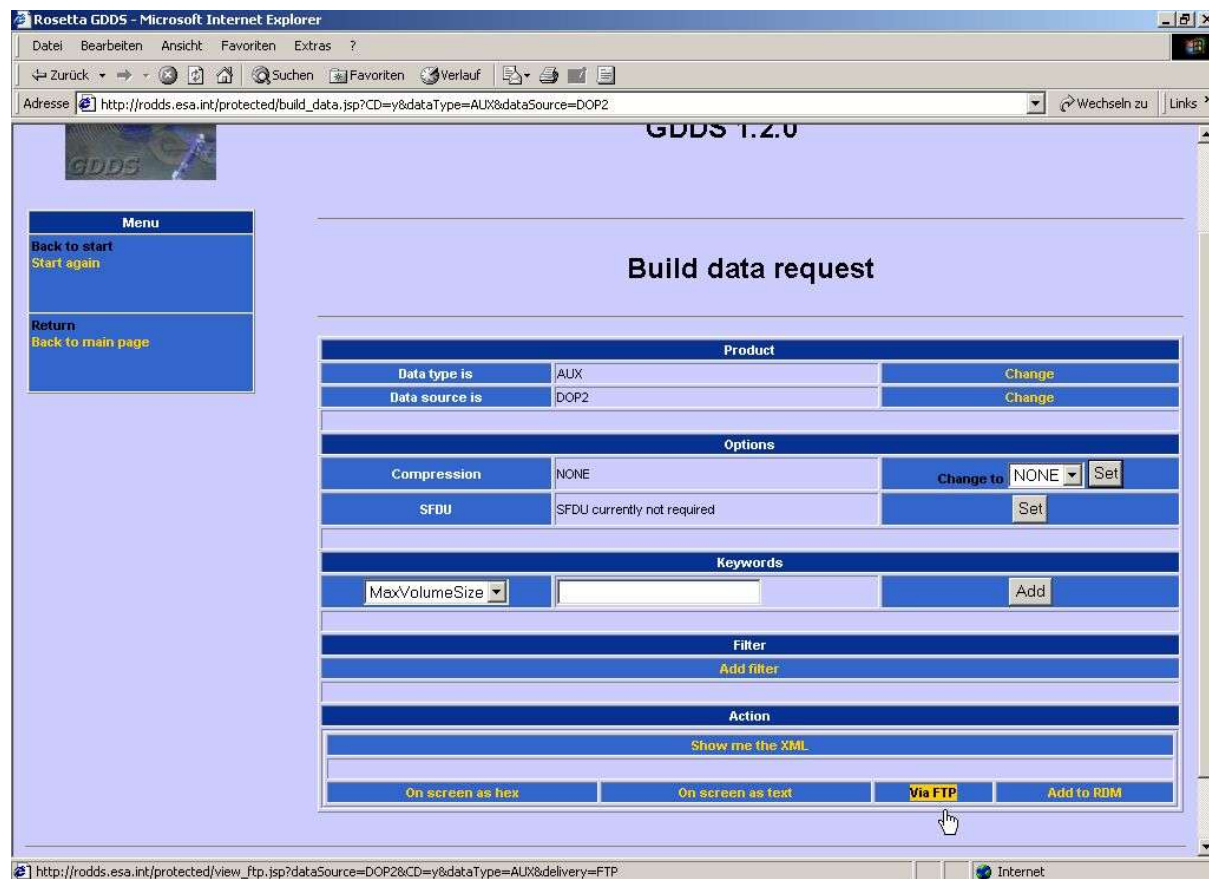


Figure 13: Build data request via FTP

Rosetta
GDDS 1.2.0

Menu
Return
Back to main page

Set FTP delivery options

Enter extra FTP delivery information

Filename (required)

Directory (optional)

Are you sure you want to submit the FTP request?

Yes No

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European Space Operations Centre
Darmstadt, Germany

Figure 14: Set FTP delivery options

and then he have to specify the filename and click Yes.

5.1.2. Request Data via the FTP Interface

The user can request data using the FTP interface. The user sends requests in XML format to the DDS computer (account: RO_RSI) Once the request arrives at the DDS computer, a polling task will first accept it and check its format. If the request does not contain any errors, it is then sent to the MCS archive. The data is then returned back to

host	gutemine.geo.uni-koeln.de
address	home\ddstest\ros

5.1.3. Request Data via the Automatic Data Delivery System

To receive data from the MCS archive via the DDS is to ask ESOC to automatically and regularly transfer the set of data via the automatic data system.

The data will arrive and stored at

host	gutemine.geo.uni-koeln.de
address	home\ddstest\ros

The users should pay attention to the fact that each transfer performed via the scheduler is overwriting the results of the previous request. It is therefore recommended that each PI implements a small application that will make sure that the results of each request is properly saved before it gets over written by the next request.

6 RSI PISA EGSE SETUP GUIDE

Quick setup guide: When at IGM, connect Network cable to adapter #1. At the PISA, connect network cable to adapter #2.

PC workstation (chury/venus):

IGM configuration, internal adapter (#1), marked ,IFP-charon':

Machine name: chury

IP-Address: 134.95.160.185

Default GW: 134.95.160.227

Subnet-mask: 255.255.255.0

DNS-server: 134.95.160.200

134.95.129.23

PISA configuration, PC-card adapter (#2) marked ,PISA -venus':

Machine name: venus-ros-pisa.esoc.ops.esa.int

IP-Address: 195.74.173.181

Default GW: 195.74.173.129

Subnet-mask: 255.255.255.192

DNS-server: 195.74.161.170

195.74.161.170

Dell Laptop Computer (squint)

IGM configuration, internal adapter (#1):

Machine name: squint.geo.uni-koeln.de

IP-Address: 134.95.160.143

Default GW: 134.95.160.227

Subnet-mask: 255.255.255.0

DNS-server: 134.95.160.200

134.95.129.23

PISA configuration, PC-card adapter (#2):

Machine name: squint-ros-pisa.esoc.ops.esa.int

IP-Address: 195.74.173.180

Default GW: 195.74.173.129

Subnet-mask: 255.255.255.192

Broadcast addr: 195.74.173.191 (obsolete?)

DNS-server: 195.74.161.170

195.74.161.170

,squint' has both configurations saved in the Windows/xp configuration. The internal TP Network adapter (#1) is configured for work at the IGM, whereas the PC-card

3Com TP/Coax adapter (#2) has been assigned the PISA configuration. This setup avoids long setup times after relocation of the machine.

TBC: DNS-names according to issued Excel-sheets are:

<machine>.ros-pisa.esoc.ops.esa.int (with a dot < . >) However, during tests the name

<machine>- ros-pisa.esoc.ops.esa.int (with a hyphen < - >) was used. The final configuration needs to be confirmed.