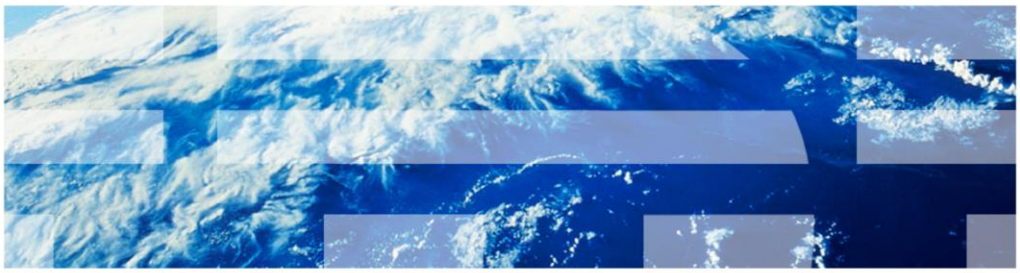
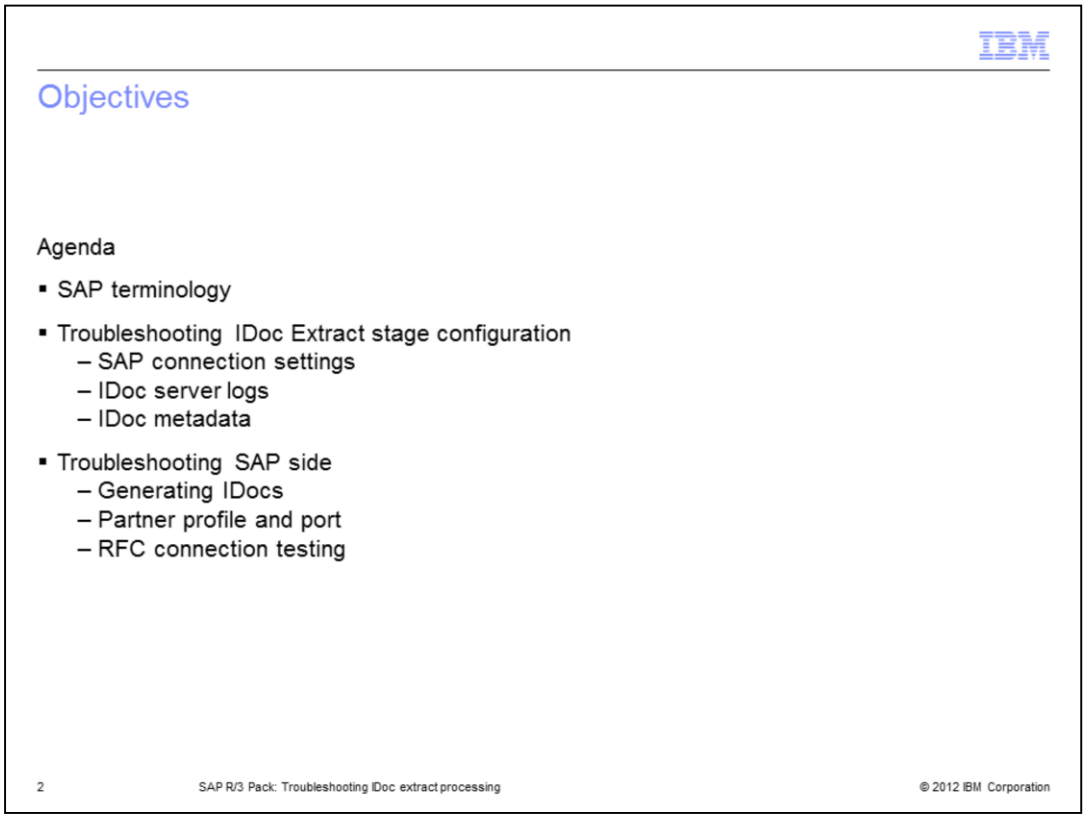
IBM

InfoSphere Information Server

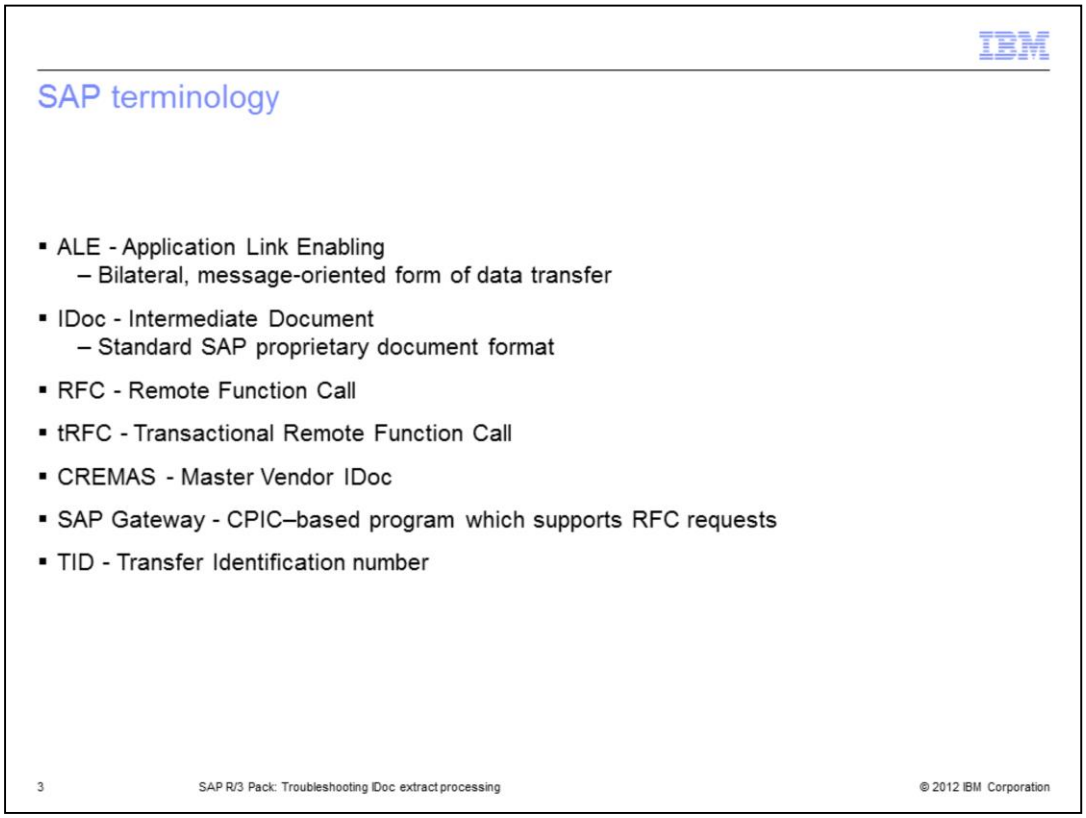
SAP R/3 Pack: Troubleshooting IDoc extract processing



This presentation will discuss the IDoc extract processing details. This presentation uses screen captures from the Information Server Pack for SAP version 6.5.01. In earlier versions the screen captures may vary but the principals are still the same. This presentation is applicable for Information Server versions 7 and 8.



The objective of this presentation is to discuss known issues and troubleshooting techniques for IDoc extract processing. The presentation will examine the SAP side and the DataStage® side and discuss common points and how to verify existence of all necessary files and processes.



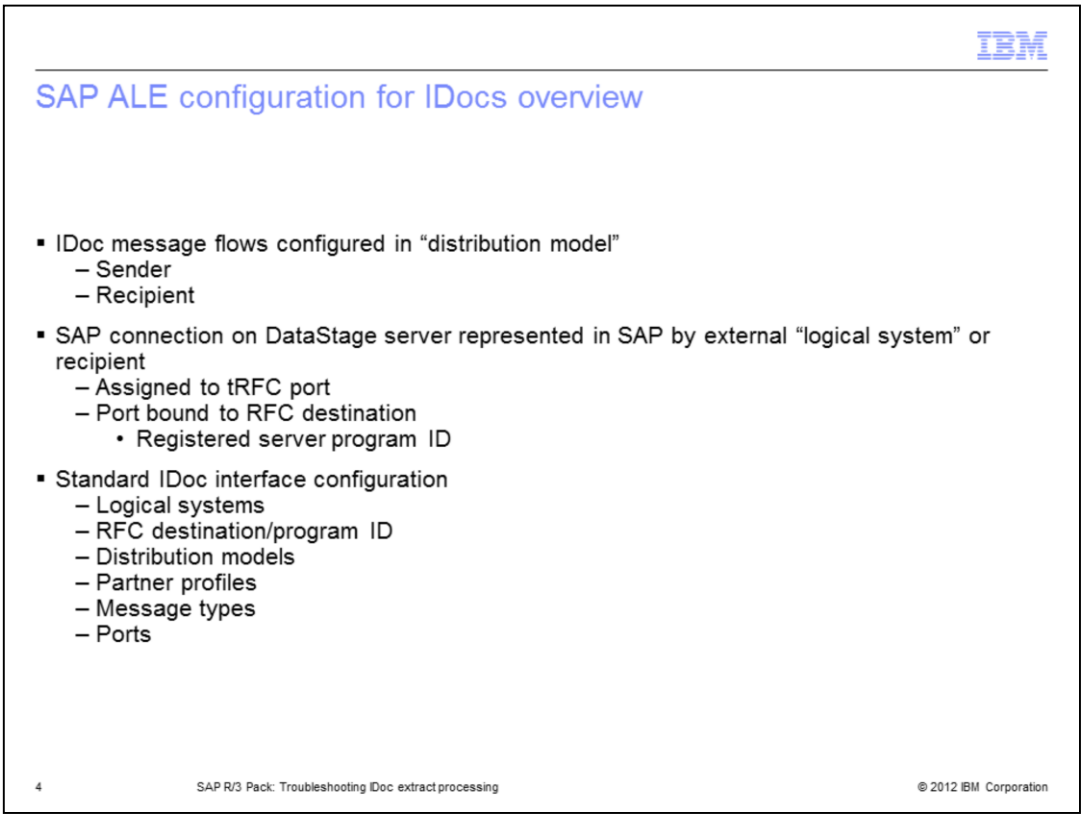
There is some basic SAP terminology that is important to understand. First, ALE stands for Application Link Enabling. ALE is a bilateral, message-oriented form of data transfer. ALE technology enables integration of business processes between SAP and external systems.

IDoc stands for Intermediate Document. IDoc is a standard SAP proprietary document format. An IDoc is a message that is a hierarchal package of related records generated by SAP in a SAP exchange format. IDocs allow different application systems to be linked by way of a message-based interface.

RFC stands for Remote Function Call.

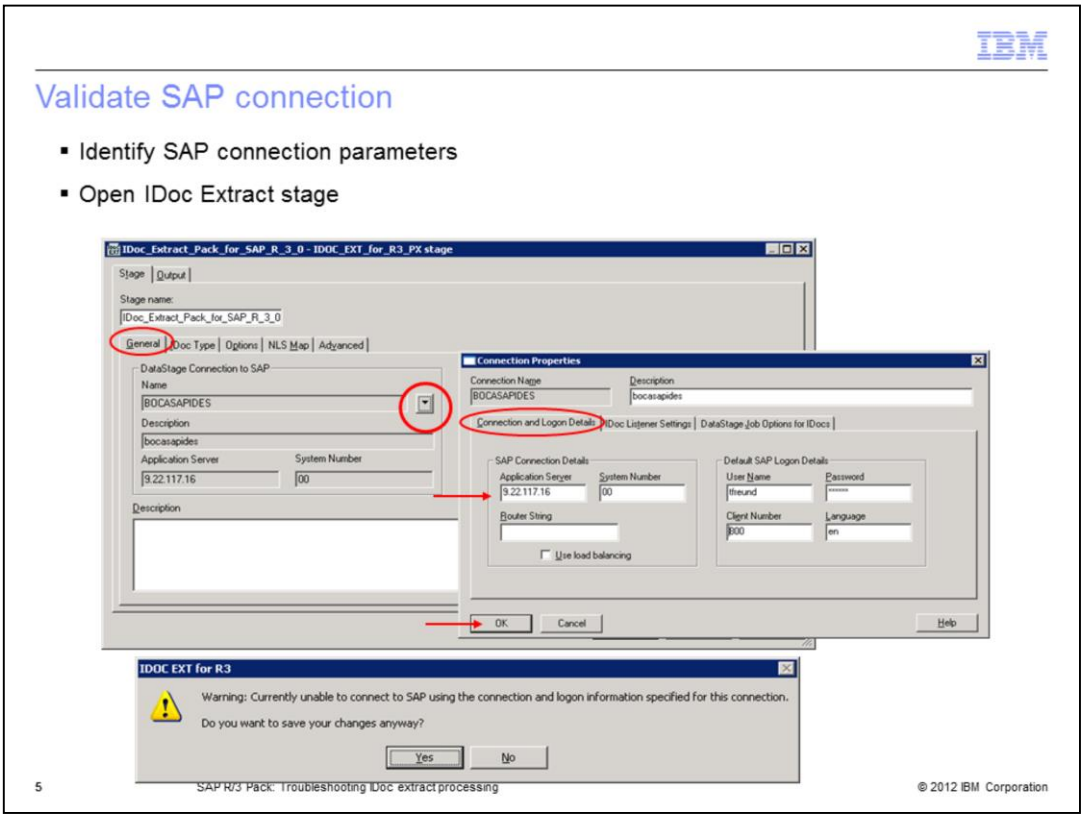
tRFC stands for transactional Remote Function Call and CREMAS is the name of the master vendor IDoc.

Each instance of a SAP System has a gateway. The gateway enables communication between work processes and external programs. It carries services which support RFC requests. Each IDoc packet is assigned by SAP a Transfer Identification number or TID.



An IDoc can be generated at any point in a transaction process. For example, during a shipping transaction process, an IDoc may be generated that includes the data fields required to print a shipping manifest. After a user performs a SAP transaction, one or more IDocs are generated in the sending database and passed to the SAP Gateway. The gateway services perform a RFC using the port definition and RFC destination specified in the Partner profile.

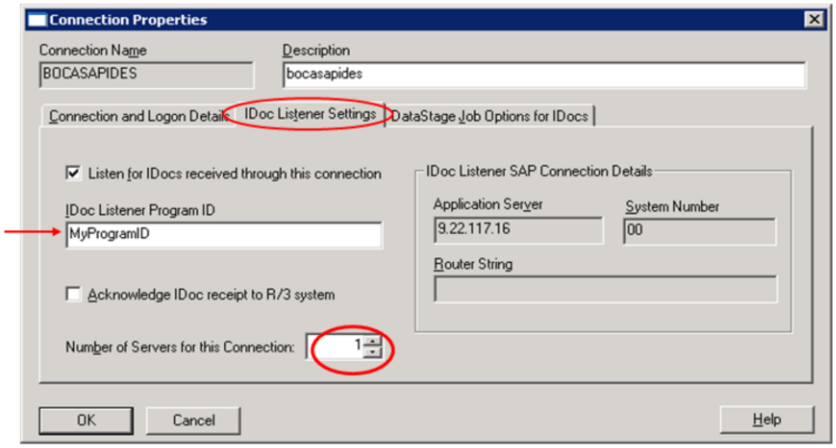
For more details, see the SAP R/3 Pack: ALE Partner Profile configuration for IDoc extract processing IBM Education Assistant module.



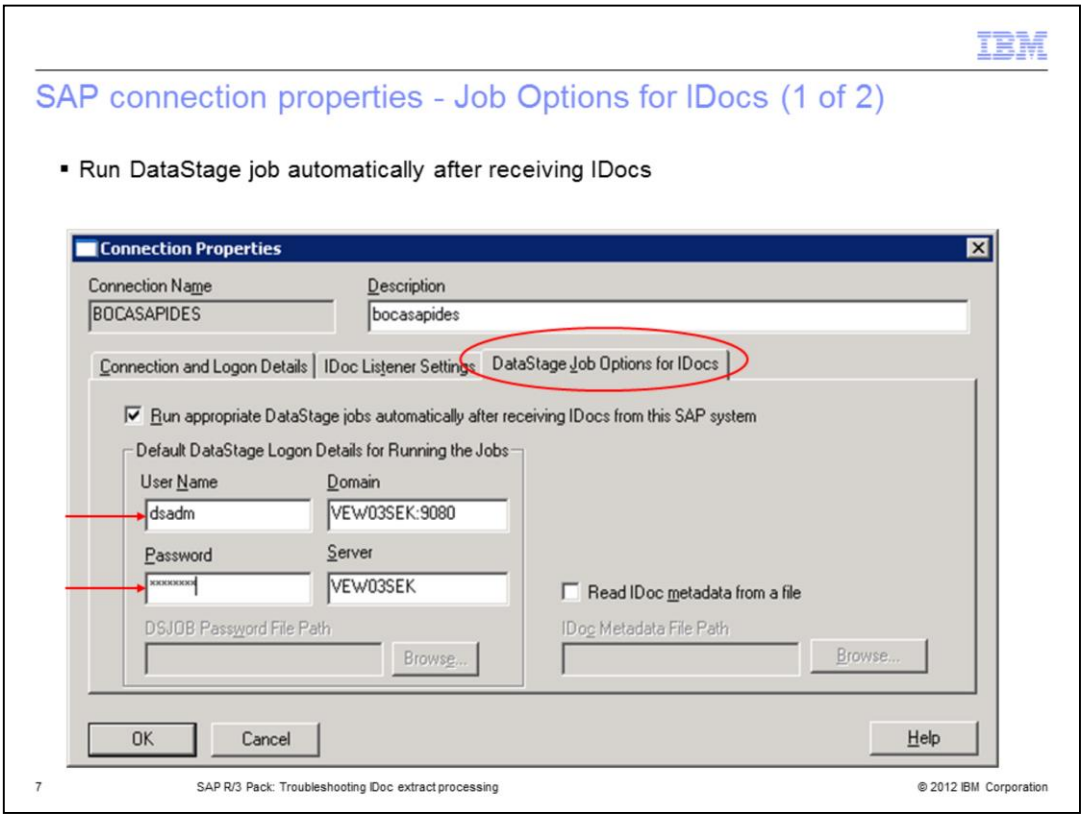
The first step is to identify the SAP connection parameters that are used to extract IDocs. Open an IDoc Extract stage and use the ‘DataStage Connection to SAP‘ properties in the General tab. Click the drop down list and choose the Properties option. Verify values for the connection parameters of the SAP Application host name, System Number, User Name, Client Number and Language. Click OK to save the connection. This will store connection information on the server and that information is used by the IDoc server to register on the gateway. If any values are not valid, the connection is not successful. As displayed on this slide, a warning message will be posted that the connection cannot be established.

SAP connection properties – IDoc Listener Settings

- Identify SAP connection parameters

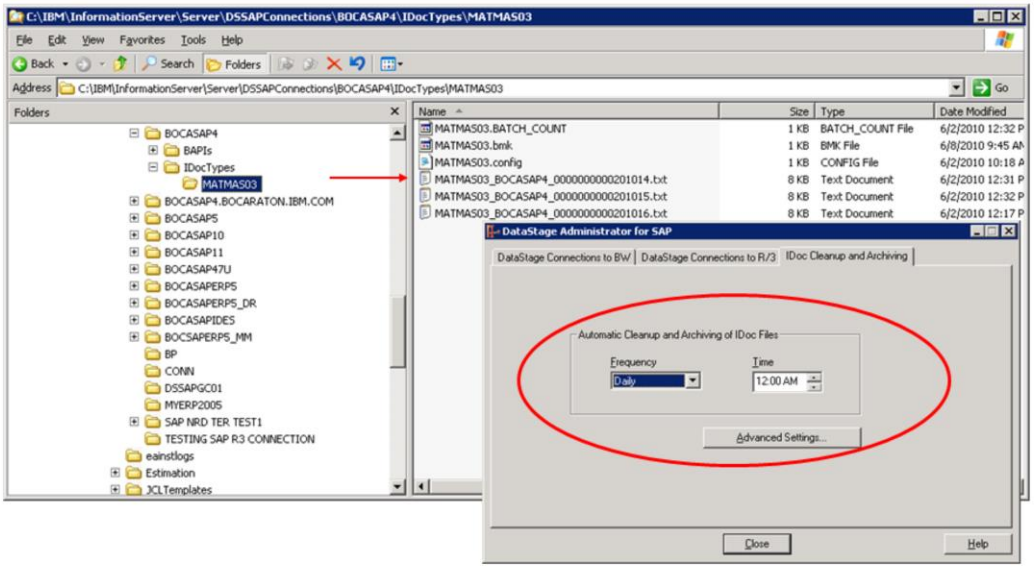


Next, choose the 'IDoc Listener Settings' tab to verify the program ID this IDoc server is listening to at the SAP Gateway. Also, verify the number of IDoc servers for this connection by checking the number in the red oval displayed on this slide. It is important to note that the IDoc servers run independently of jobs.

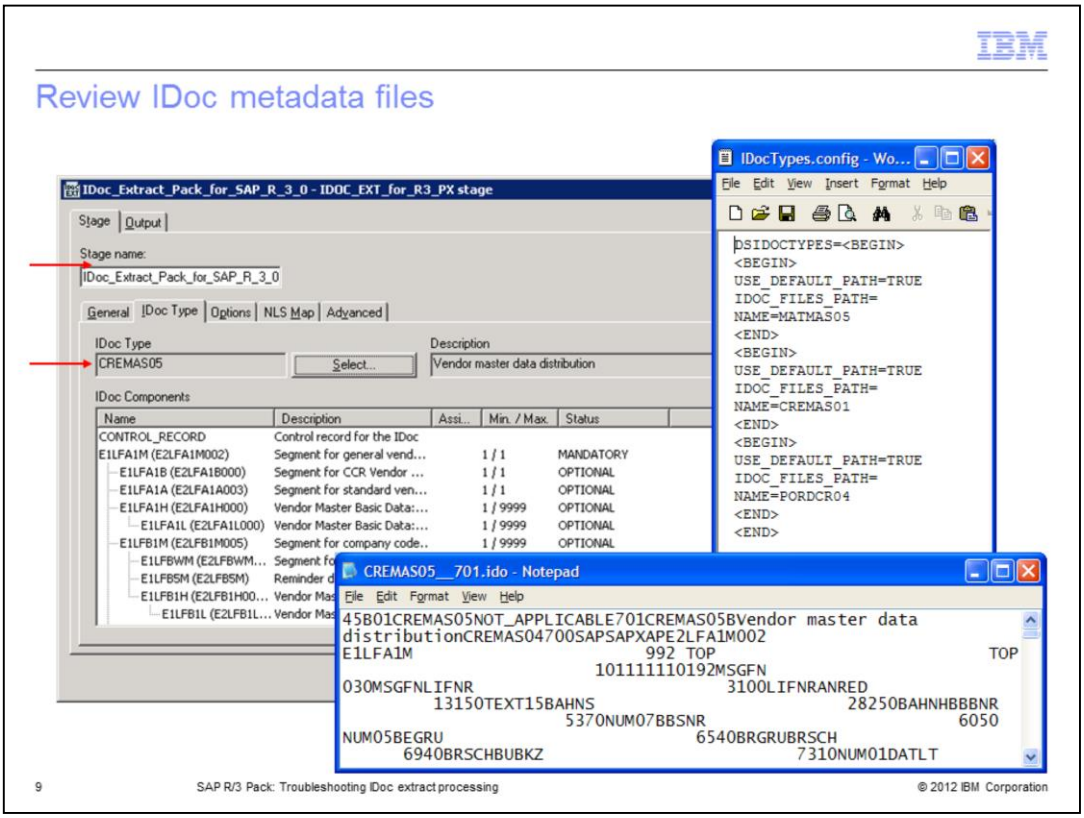


Proceed to the 'DataStage Job Options for IDocs' tab and verify if the 'Run appropriate DataStage jobs automatically after receiving IDocs from this SAP system' check box is enabled. If enabled, the DataStage job will start automatically after receiving IDocs. If the job did not start after IDocs were received, verify the domain, server, user name and password values for connection to the DataStage server. If not enabled, the IDocs is stored in a file system and a user can manually start the job at any time to process received IDocs.

IDoc staging area – Job Options for IDocs (2 of 2)

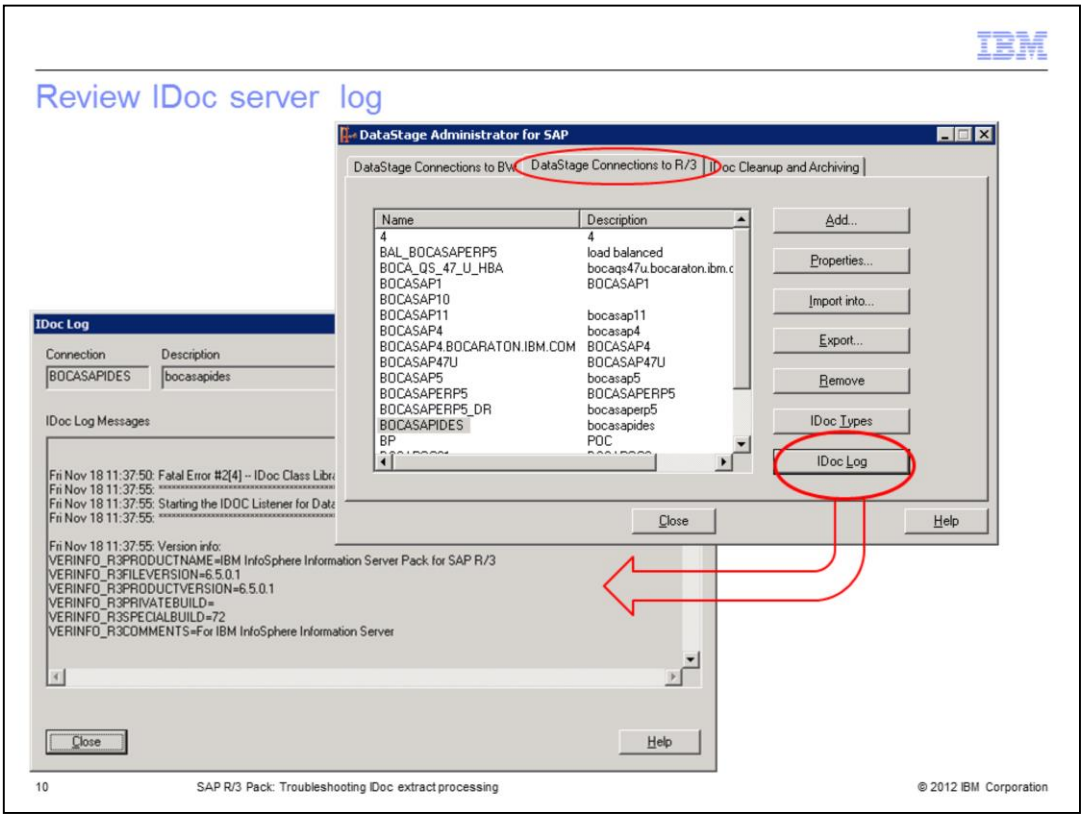


This slide displays an example of a file system or so called, IDoc staging area, located on a Windows server where IDocs is stored when they arrive from SAP. Note that a TID is appended to the file name. Each file represents an IDoc packet. The job will read and process the packets, archive them to prevent them from being processed twice, and then delete them based on the Automatic Cleanup settings in the DataStage Administrator for SAP client.



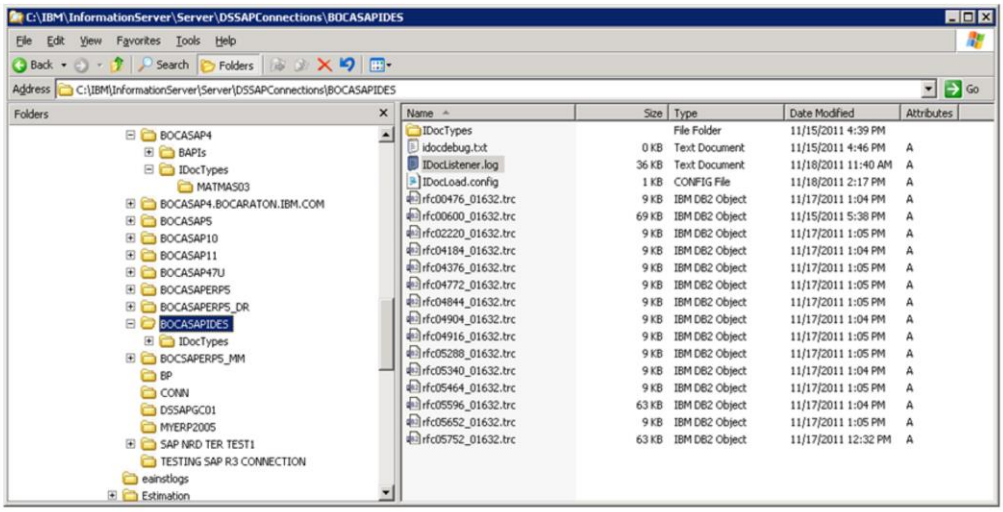
The IDoc Extract stage will save IDoc metadata in a form of a .ido text file, such as CREMAS05_701.ido, and will create an entry into the IDocTypes.config file.

The .ido files are stored under DSSAPHOME/DSSAPConnections directory. The IDocTypes.config file is stored in DSSAPHOME/DSSAPConnections / <SAP connection name> directory. During the extract process, the IDoc server uses the .ido file to validate the IDoc type that appeared at the SAP Gateway before processing it.

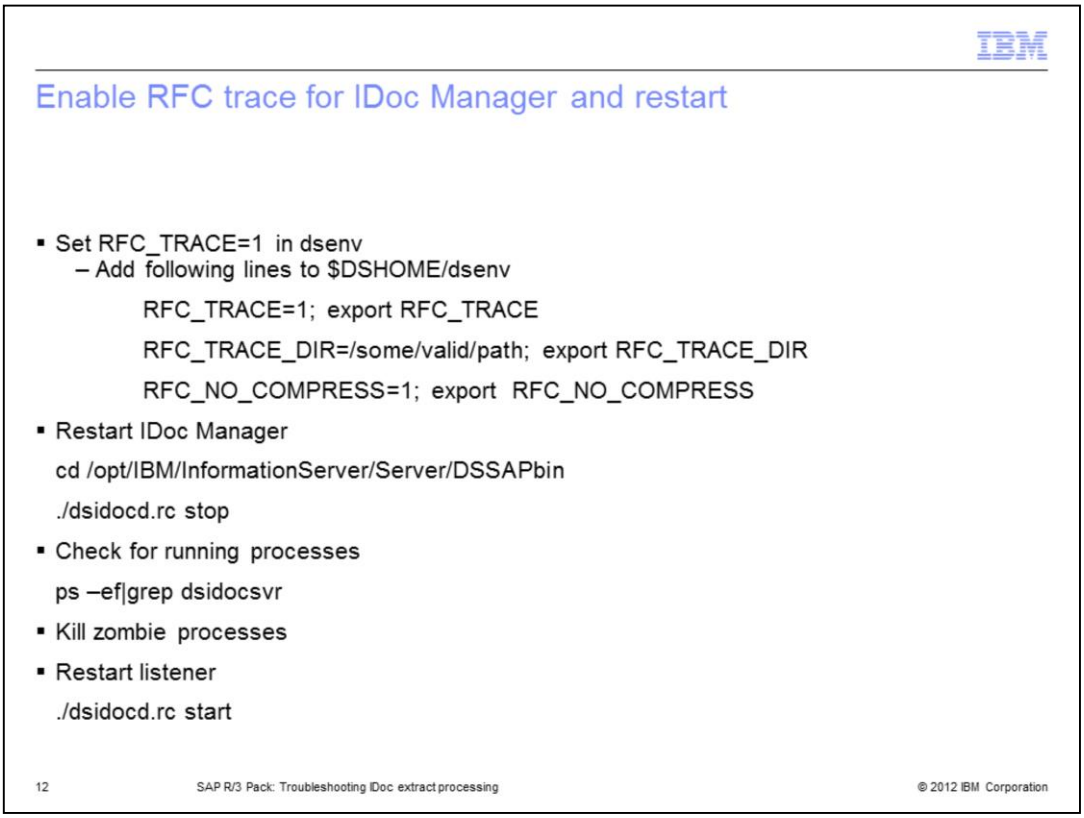


This slide displays usage of the DataStage Administrator for SAP client to further investigate SAP connection errors. Navigate to the DataStage Connections to R/3 tag in the DataStage Administrator for SAP. Click the SAP connection name in error and use the IDoc Log button to view the log for details on this SAP connection.

Review IDoc Listener log



You can also find the same information in the IDoc Listener.log file located in the SAP connection directory. It is important to notice that the RFC trace files, named rfc*.trc, are created in this location by default if you receive SAP connection errors and the environment variable RFC_TRACE =1, is set in the dsenv file.

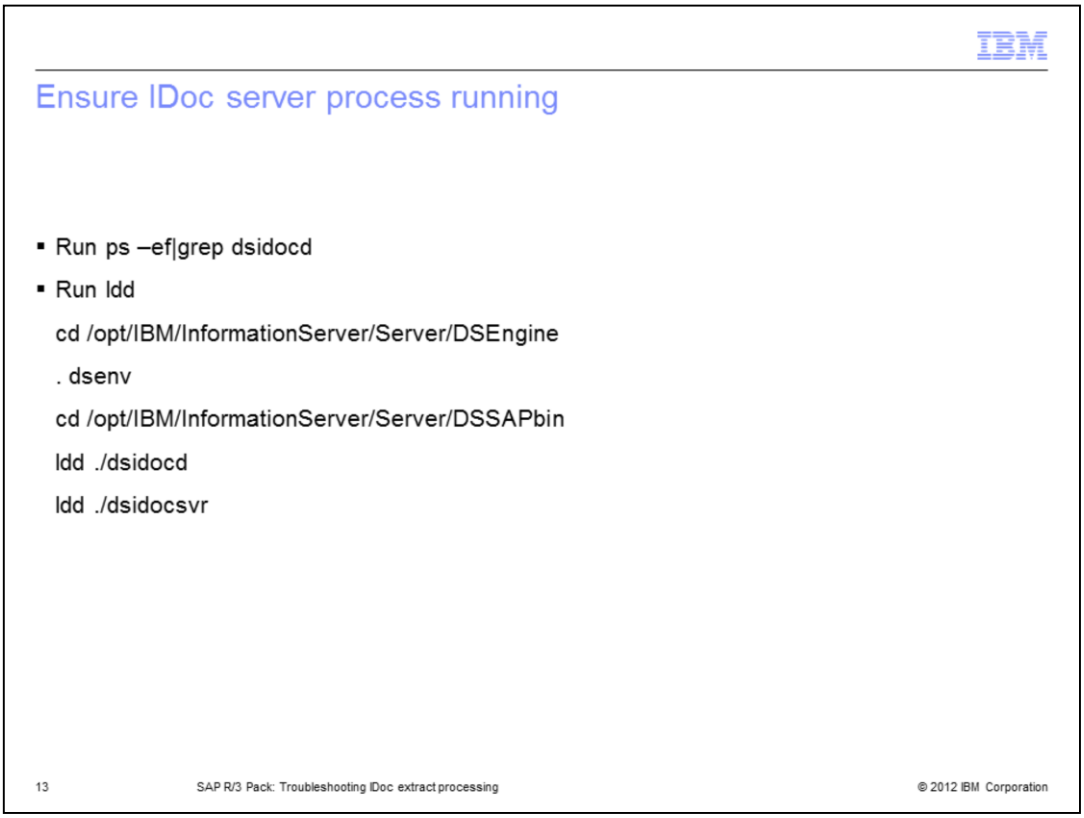


As stated on the previous slide, the RFC trace is enabled by setting up the environment variable RFC_TRACE=1 in the dsenv file in UNIX and Linux. The trace files are generated by default in the working folder of the process which is set to the connection folder. See slide 11 for details. The trace destination folder can be changed by setting the environment variable RFC_TRACE_DIR=(RFC underscore trace underscore dir equals) to some valid path. To make the table content visible, the RFC_NO_COMPRESS variable should be set to 1. RFC trace files can be collected to further investigate the cause of a communication error. The generated traces will have the name rfc*.trc, rfc *.log, and dev_rfc.trc.

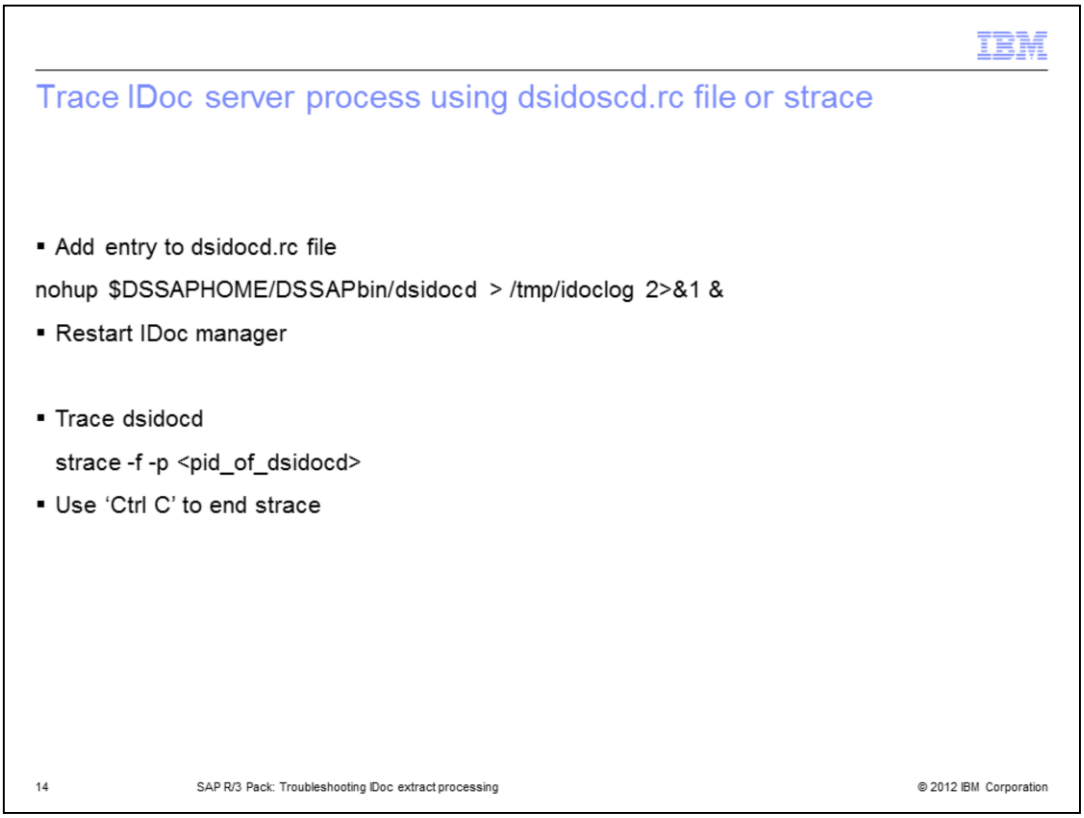
It is important to note that if you add or change any of the environment variables in dsenv, you must stop and restart the IDoc Manager for the changes to take effect. To restart the IDoc Manager, cd /opt/IBM/InformationServer/Server/DSSAPbin and run ./dsidocd.rc stop. Check for running processes by executing ps –ef|grep dsidocsvr. To restart the listener, run ./dsidocd.rc start.

If the DataStage server runs on Windows, set environment variables at the system level as RFC_TRACE=1, RFC_TRACE_DIR=c:\tmp\trace and RFC_NO_COMPRESS=1.

To disable RFC trace on Windows, change the flag to RFC_TRACE=0 and re-start the Windows system.



Next, ensure the dsidocsvr process is active by using the process report command ps –ef|grep dsidocsvr (p s space dash e f pipe grep space d s idoc s v r). The command will return the information about the IDoc server process. To ensure the environment is set up correctly, run the 'list dynamic dependency', or ldd command, on the dsidocd and dsidocsvr shared libraries. For this, cd /opt/IBM/InformationServer/Server/DSEngine and source the dsenv. Then, cd /opt/IBM/InformationServer/Server/DSSAPbin and run ldd ./dsidocd and ldd ./dsidocsvr.



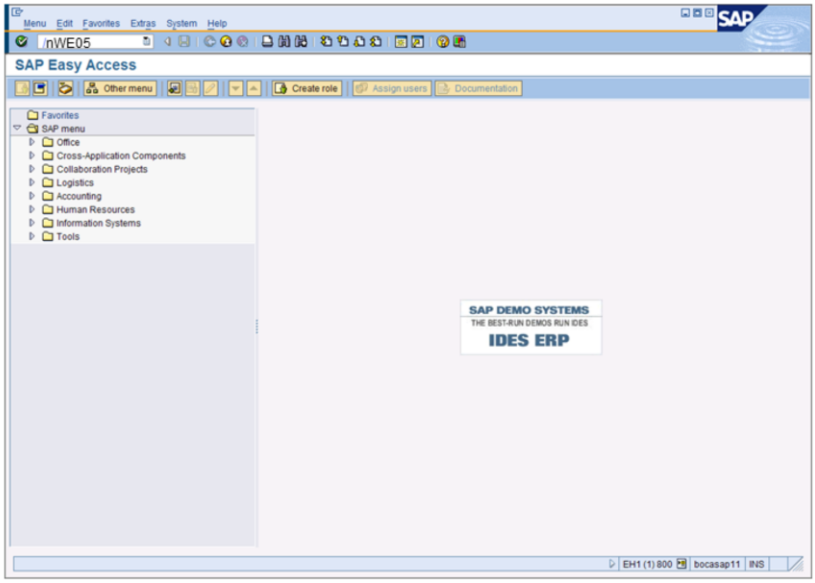
When the RFC trace does not reveal enough information or is not available, use the dsidocd.rc file to setup an additional trace. To configure the dsidocd.rc file, you must first stop the IDoc Manager. Next, edit the dsidocd.rc file and find and comment out the line 'nohup $DSSAPHOME/DSSAPbin/dsidocd > /dev/null 2>&1 &'.

Add an entry 'nohup $DSSAPHOME/DSSAPbin/dsidocd > /tmp/idoclog 2>&1 &' to the dsidocd.rc file. Then, restart the IDoc Manager. See slide 12 on how to restart the IDoc Manager. When the error occurs again, investigate the IDoc log file in /tmp/ directory. To disable the tracing, stop the IDoc Manager and remove the change from the dsidocd.rc file.

In many cases, a program may fail because it is unable to open a file or because of insufficient memory. Tracing the output of the program will clearly show the cause of either problem. You can trace the IDoc server process by using strace -f -p <pid_of_dsidocd>. Strace runs in conjunction with the program and prints out a trace of all the system calls made by the IDoc server process. Use 'Ctrl C' to end the strace.

Initial SAP applications window

- Transaction code /nWE05

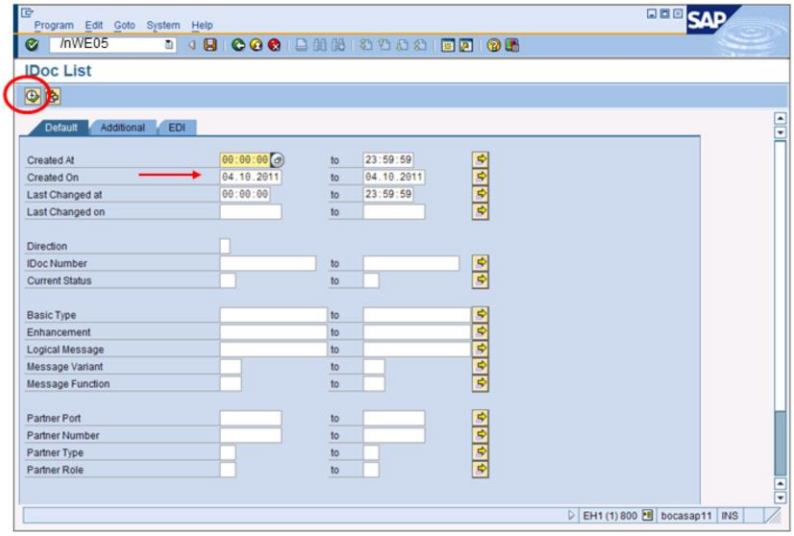


15 SAP R/3 Pack: Troubleshooting IDoc extract processing

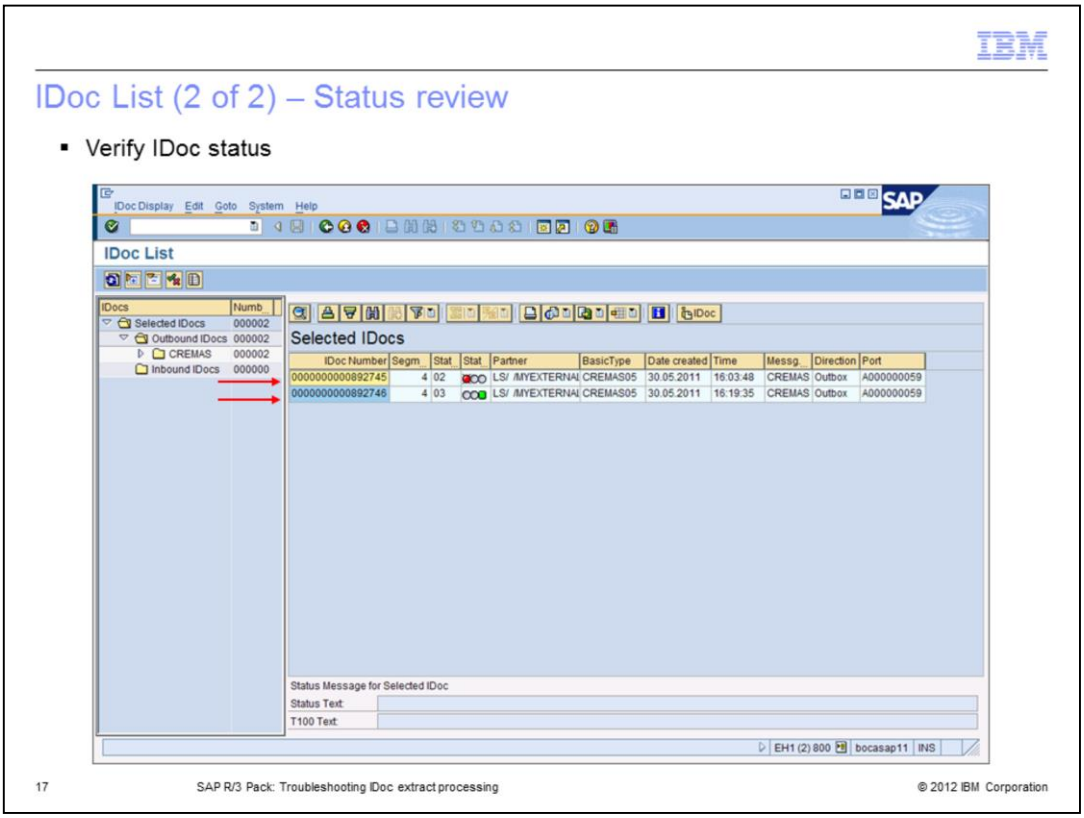
If no IDocs have arrived in the staging area, start IDoc Extract troubleshooting on the SAP side by checking on the status of the sent IDocs. This slide displays the initial SAP applications window after connecting to a SAP client system with a dialog user. When in the SAP application system, type /nWE05 transaction code in the navigation window and press Enter.

IDoc List (1 of 2) – Find IDocs

- Enter time frame IDocs sent



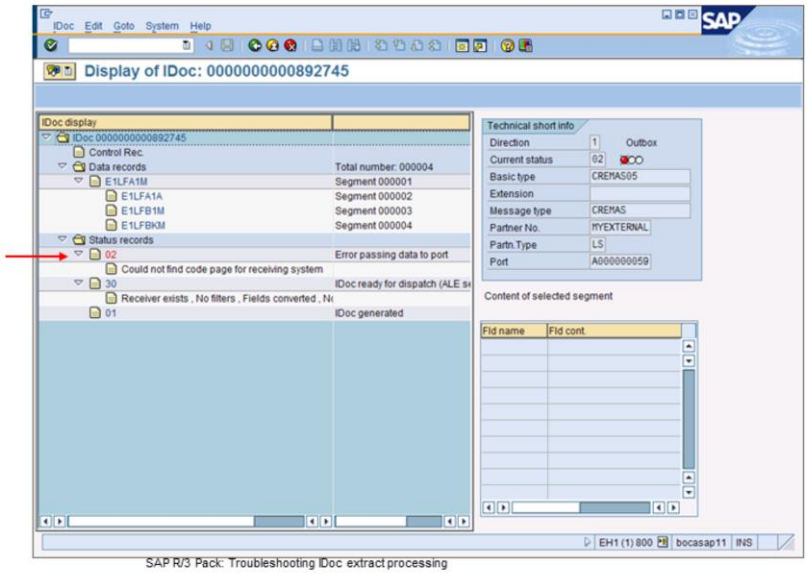
In the initial 'IDoc List' window, enter the time frame when the IDocs were sent in the 'Created On' parameter field and click the Execute icon displayed on this slide in the red oval.



To verify if the IDoc was transferred to the port successfully, find the IDoc and verify it's status in terms of status codes and the corresponding green, yellow and red color lights. A green light is the indicator that data passed to a port successfully. A red light is the indicator of an error passing data to the port and a yellow light is an indicator of data passed with a warning. Double click an IDoc number to view it's data and the error message.

Display of IDoc (1 of 2) - Error message

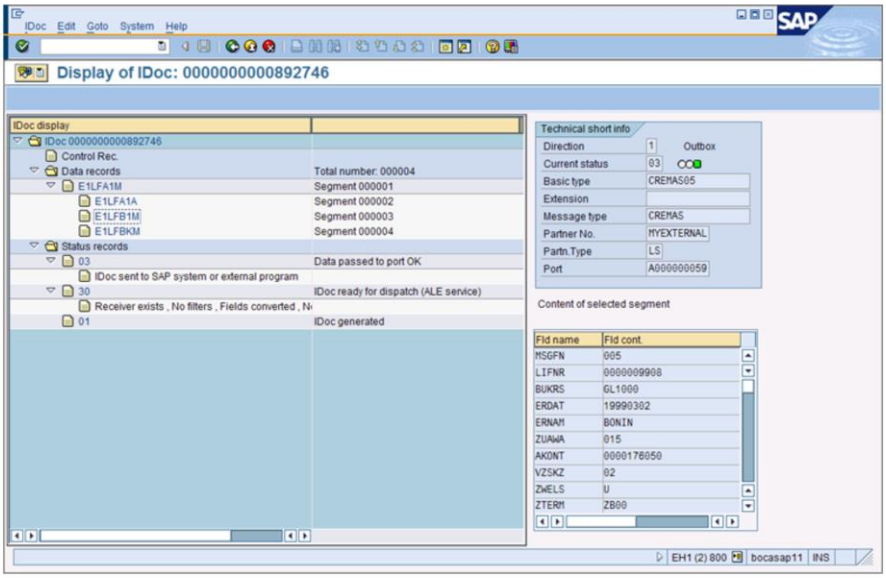
- Error code 02
- RFC destination for port not set to Unicode



SAP R/3 Pack: Troubleshooting IDoc extract processing

This slide displays an IDoc with status red. The error code is 02 with the message: Could not find code page for receiving system. This error is issued because the RFC destination for the port was not set to Unicode. To communicate properly, the RFC destination for the IDoc connection should be defined as Unicode. No IDocs are sent to the gateway port if the port is configured to use a non-Unicode RFC destination. The IDoc is not sent to the gateway until the reported issue is fixed. Note that on a customer side, a SAP basis administrator is typically fixing these types of errors. Fix the error and resend the IDoc using the transaction code BD87.

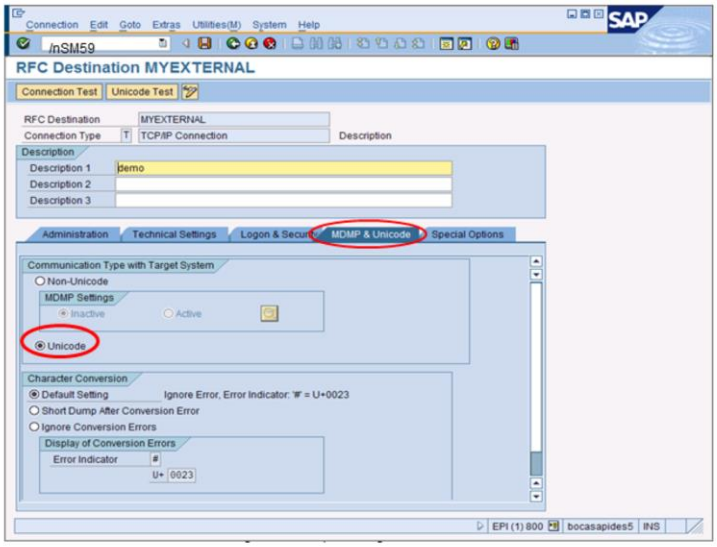
Display of IDoc (2 of 2) - Data review



In case of the data type errors, you will also want to investigate actual data records, the number of segments, and data content of the fields using the Display of IDoc application as displayed on this slide.

RFC Destination: Unicode test

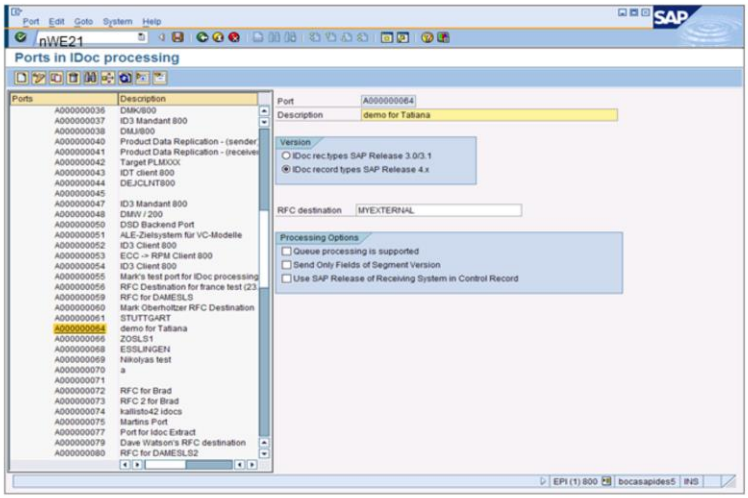
- Check Communication Type is Unicode
  - Transaction code /nSM59
  - Expand TCP/IP connections
  - Select RFC Destination and click Change



In order to verify the IDoc connection is set to Unicode, type /nSM59 in the transaction code field in the navigation window and press Enter. Expand TCP/IP Connections, select your RFC Destination and click Change. Click the MDMP & Unicode tab and check that the Communication Type with Target System is set to Unicode.

Verify tRFC Port in IDoc processing

- Transaction code /nWE21
- Verify port and RFC combination match
  - Port from IDoc Display (slide 18)
  - RFC Destination (slide 20)



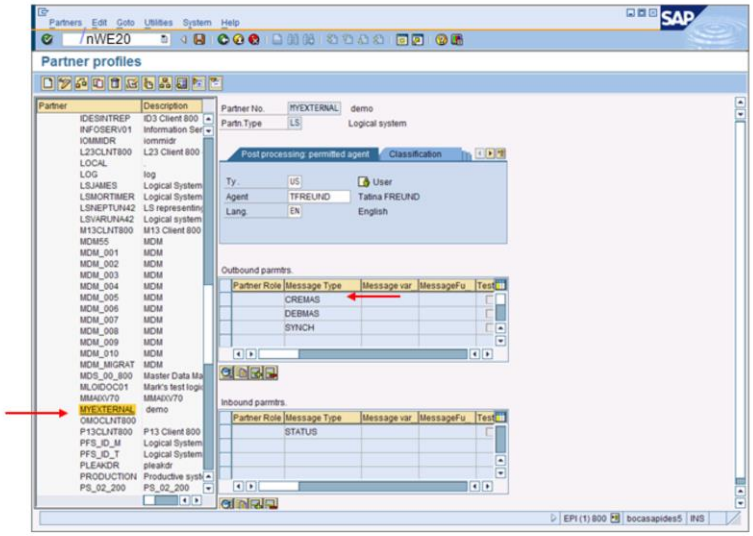
21 SAP R/3 Pack: Troubleshooting IDoc extract processing

If the IDoc is still not received, use the WE21 transaction code to verify the tRFC port configuration and the RFC destination, which is assigned to the port, match. To do this, in the SAP Application System, type /nWE21 transaction code in the navigation window and press Enter. This will open the ‘Ports in IDoc processing’ window. Expand TransactionRFC and find the port listed in WE05. This should list your RFC Destination name. In this example, the port number is A000000064 and the RFC destination is MYEXTERNAL.

Each SAP connection on the DataStage server is represented in SAP by an external logical system which is assigned to a tRFC port. The port is bound to an RFC destination. The IDoc server listens on tRFC port. When a communication IDoc package is collected and ready to be transferred by the SAP Gateway to the DataStage server, an IDoc listener will check if the program ID it is listening with is matching the program ID carried by the IDoc packet. If there is no match then there is no transfer.

Verify Partner profiles: Message type (1 of 2)

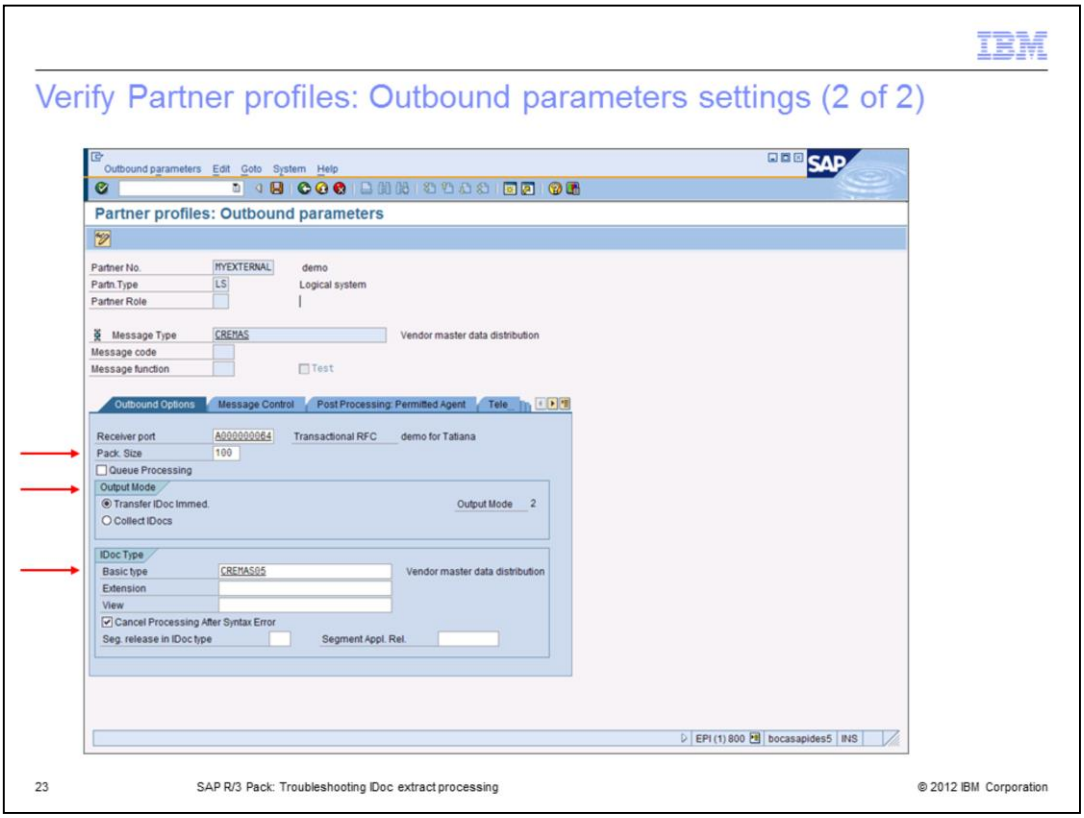
- Transaction code /nWE20



The next area to check if the IDoc is not being received, is the Partner profiles. Use the WE20 transaction code to verify the Partner profiles configuration and the configuration of the IDoc message types to be transferred by this Partner or the port.

When in the SAP Application System, type /nWE20 transaction code in the navigation window and press Enter. This will open the ‘Partner profiles’ window. On this slide, the partner MYEXTERNAL is configured to send outbound IDocs of CREMAS and DEBMAS message types.

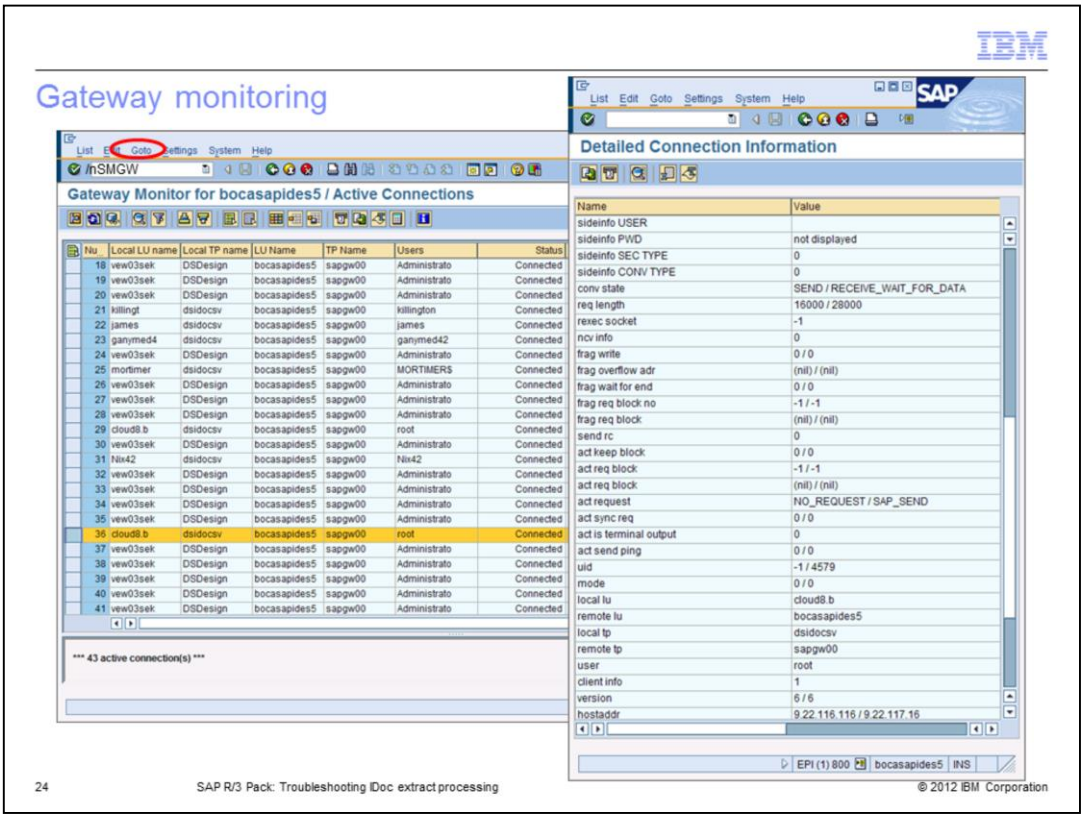
During troubleshooting, make sure the IDoc message type in question has been configured in the Partner profile. To view or edit settings for the CREMAS message type, double click the CREMAS record in the Outbound parameter window.



This will open the Partner profiles Outbound parameters window. Review or change the receiver port and settings such as the Pack Size and the Output Mode. If the ‘Collect IDocs’ output mode is selected, IDocs are collected first and then transferred as a packet of the specified pack size. Each packet will have a TID assigned by SAP.

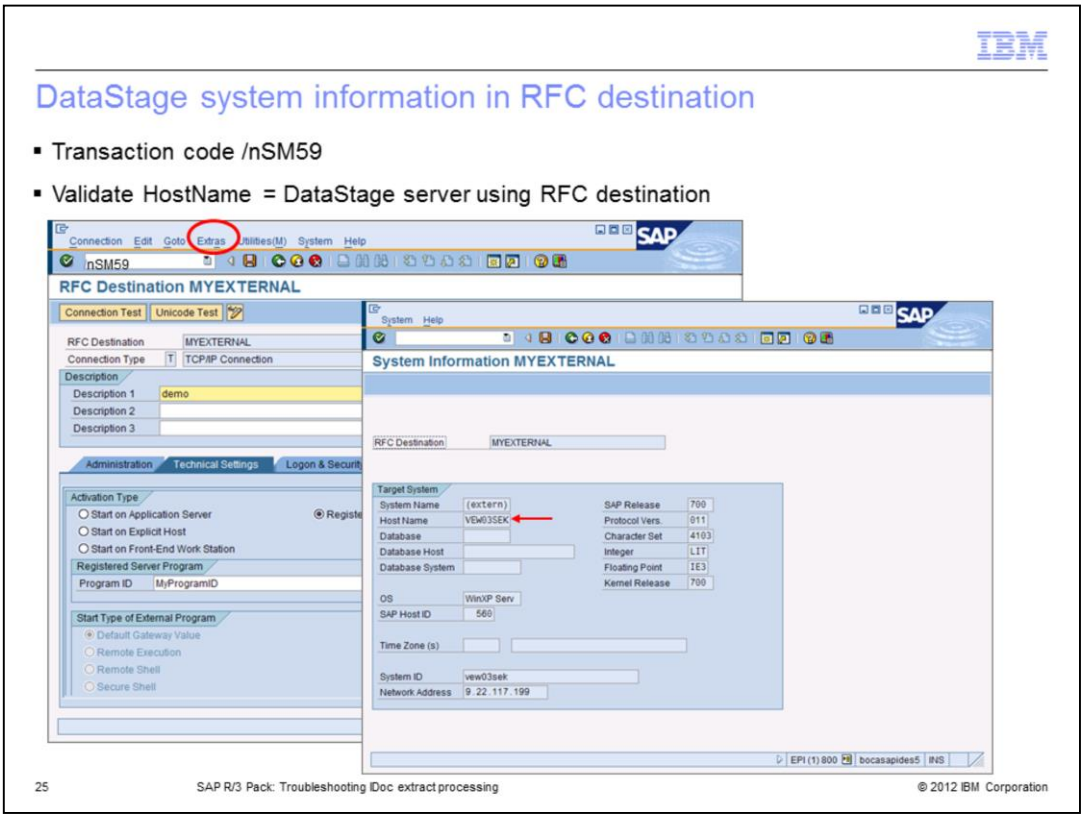
If the ‘Transfer IDoc Immediately’ mode is selected, IDocs will be transferred one by one and the pack size value, if set, will be ignored. In this case, each IDoc will have an assigned TID.

There are some key points to check when troubleshooting. First, if the setting is the ‘Collect IDocs’ with the pack size defined as 100, but 99 IDocs were sent, no IDocs will be transferred to the SAP Gateway until 100 IDocs are collected. Second, verify that CREMAS05 IDoc type has been sent. IDoc type CREMAS01, if sent, is not transferred by this port.



Next, verify the IDoc server is listening on the gateway using the SMGW transaction code. SMGW is a monitoring gateway tool. From ‘Goto’ found on the menu as displayed on this slide in the red oval, select ‘Logged on Clients’ to view all the SAP clients connected to the gateway.

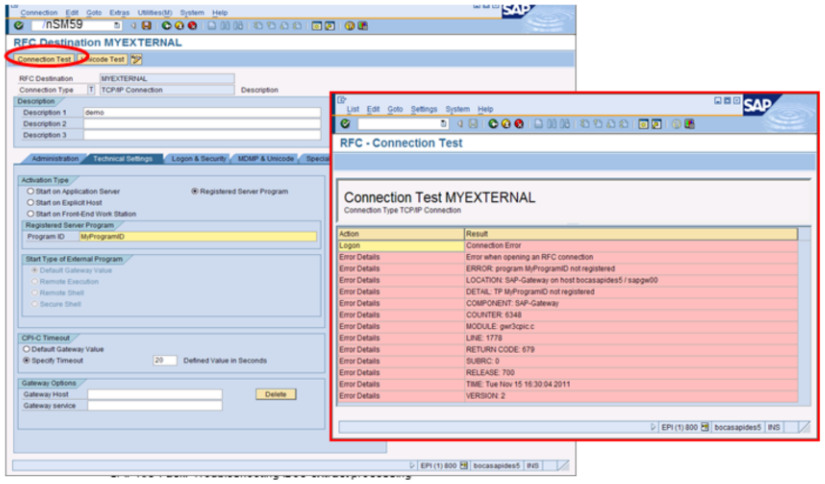
The IDoc server connects as a client with a Local Transaction Program named ‘dsidocsv’. The DataStage Designer client is connected with a ‘DSDesign’ name. Review status and connection details. To review client connection details, highlight the client and from Goto, select ‘Active connections’ and then ‘Details’.



Once you know that there is in fact an IDoc server listening, the next thing to check is to find out which DataStage server is using the RFC destination or where the IDoc server originates. To do this, use the SM59 transaction code. Click Extras as displayed on this slide in the red oval. Select ‘System Information’ and then ‘Target System’. Validate the HostName value is the DataStage server that is using this RFC destination.

Testing RFC destination (1 of 2)

- Failed test connection => Investigate on DataStage side
  - Verify program ID in job and SM59 match
  - Ping SAP host
  - Restart IDoc Manager and test again
- Verify gateway in RFC destination = Gateway the IDoc server is listening on



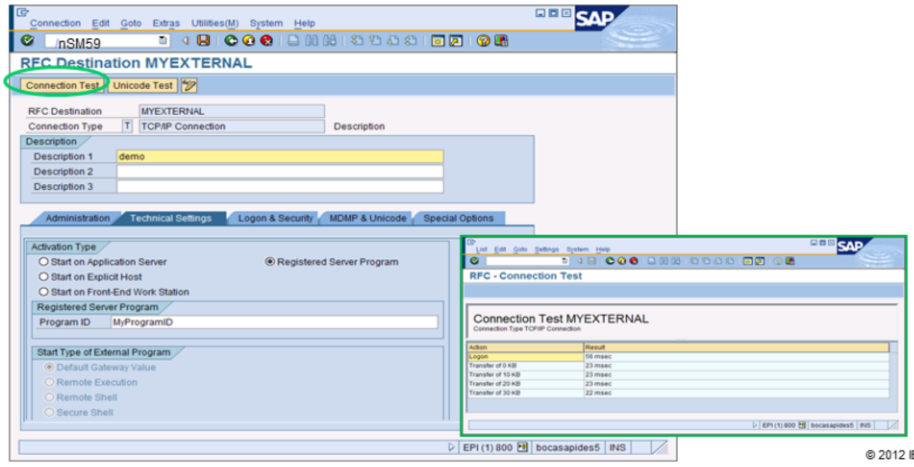
Transaction SM59 can also be used to test the RFC destination by clicking the 'Connection Test' button, as displayed on this slide in the red oval. To check that the IDoc server is listening on the correct RFC destination, stop the IDoc server, navigate to the RFC destination and perform a connection test. The connection test should fail. Start the IDoc server again and do the connection test again. This time it should be successful.

If the connection test fails, investigate the issue on the DataStage server side. First, verify the program ID in the job and in the SM59 match. Refer to slide six to locate the program ID in the job. Then, ping the SAP host to eliminate networking issues. Make sure the IDoc Manager is running. Restart IDoc Manager and try the connection test again. Refer to slide 12 for details on how to restart an IDoc Manager.

It is important to note that SAP Applications host system runs a RFC gateway server and typically that is a default gateway. The gateway host is specified as the RFC destination parameter. Verify the gateway in RFC destination and the gateway the IDoc server is listening on, match.

Testing RFC destination (2 of 2)

- Program ID must be unique
  - No two IDoc servers can share same program ID
    - Number one cause of errors
- Job hang or abort
  - Run RFC connection test in /nSM59
    - Successful connection test means possible IDoc servers sharing program ID



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It is important to understand that the program ID needs to be unique; no two IDoc servers can share the same program ID. This is the single most often cause of errors.

The IDoc Manager has many IDoc servers running at the same time. Each IDoc server is bound with it's own program ID. When communication IDoc package is collected and ready to be transferred by the SAP Gateway to the DS server, an IDoc server will check if the program ID it is listening with matches the program ID carried by the IDoc packet. If there is no match, there is no transfer. But, if two IDoc listeners have the same ID, the data is accepted, the data's integrity will be compromised and the data will be lost.

When a job is hanging or aborting with a timeout issue, start investigating by running the RFC connection test in SM59. If the connection test succeeds but the job is hanging or aborting, there might be another IDoc server sharing the program ID. To verify, stop the IDoc listener and test the connection in SM59 again. The RFC connection test should fail. If it does not, another IDoc server is listening with the same program ID.

To confirm that there is no other listener, when the IDoc server is stopped, the sm59 test connection should fail. If the connection test succeeds and there is no other IDoc server listening with the same program ID but a job is hanging or aborting, verify if IDocs have reached the gateway by using the troubleshooting details described on slides 17, 23, 24, and 25.

If the IDocs have reached the gateway, verify if the IDoc types are matching and a .ido file exists for the IDoc type using the troubleshooting technique described on slide 9. For connection issues, see slides 10 through 14.

NOTE: For IDoc extract processing details, see the SAP R/3 Pack: IDoc extract processing IBM Education Assistant module.

For IDoc extract configuration details on the SAP side, see the SAP R/3 Pack: ALE Partner Profile configuration for IDoc extract processing IBM Education Assistant module.

References

- Additional technical materials
  - Environment variable reference
    - https://www-304.ibm.com/support/docview.wss?uid=swg21424455
- Known problems
  - https://www-304.ibm.com/support/docview.wss?uid=swg21395447
- Technotes and troubleshooting documentation

http://www-01.ibm.com/support/search.wss?word=aw&wfield=sap&nw=download&apar=include&tc=SSZJPZ&tc1=SSC2NNZ&tc1=SSCMKC3&atrn=&atrv=&atrn1=&atrv1=&atrwcs=on&lang=all&dr=all&r=40&ibm-submit=Submit&cc=us&from=advs&loc=en_US&rs=14&cs=utf-8

This slide displays links to additional information.

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