

Adabas Cluster Services and Entire Net-Work

Entire Net-Work is used to send Adabas and Adabas Cluster Services commands back and forth between operating system images. No changes have been made to Entire Net-Work to accommodate Adabas Cluster Services.

Although ADACOM and several Adabas cluster nuclei could run within a single operating system image without Entire Net-Work, there could then be no application programs for that database in any other operating system image.

To support a cluster environment that includes more than one operating system image, a limited Entire Net-Work library is included as part of Adabas Cluster Services.

One copy of Entire Net-Work is installed on each operating system image participating in the sysplex. The configuration for a given system comprises

- an Entire Net-Work control module;
- control module service routines; and
- the XCF line driver.

Note:

For existing users of mainframe Entire Net-Work, the XCF line driver may be optional. See the section *What to Install* in the *Installation* documentation for more information.

Each system with Entire Net-Work installed becomes a "node" in the network. Each node's links to other adjacent nodes are defined by name and driver type.

Application requests are automatically routed; the application is totally insensitive to the actual location of the operating system images.

Each Entire Net-Work node maintains a "request queue" for incoming requests that is similar to the command queue used by Adabas. It allows the node to receive Adabas calls from locally executing applications, which Entire Net-Work then dequeues and transports to the nodes where the requested services reside.

Each local Entire Net-Work node also keeps track of all active network services, and therefore can determine whether the user's request can be satisfied or must be rejected. If the request can be serviced, the message is transmitted; otherwise, Entire Net-Work advises the calling user immediately with response code 148, just as the Adabas router would do for a local database request.

The chapter covers the following topics:

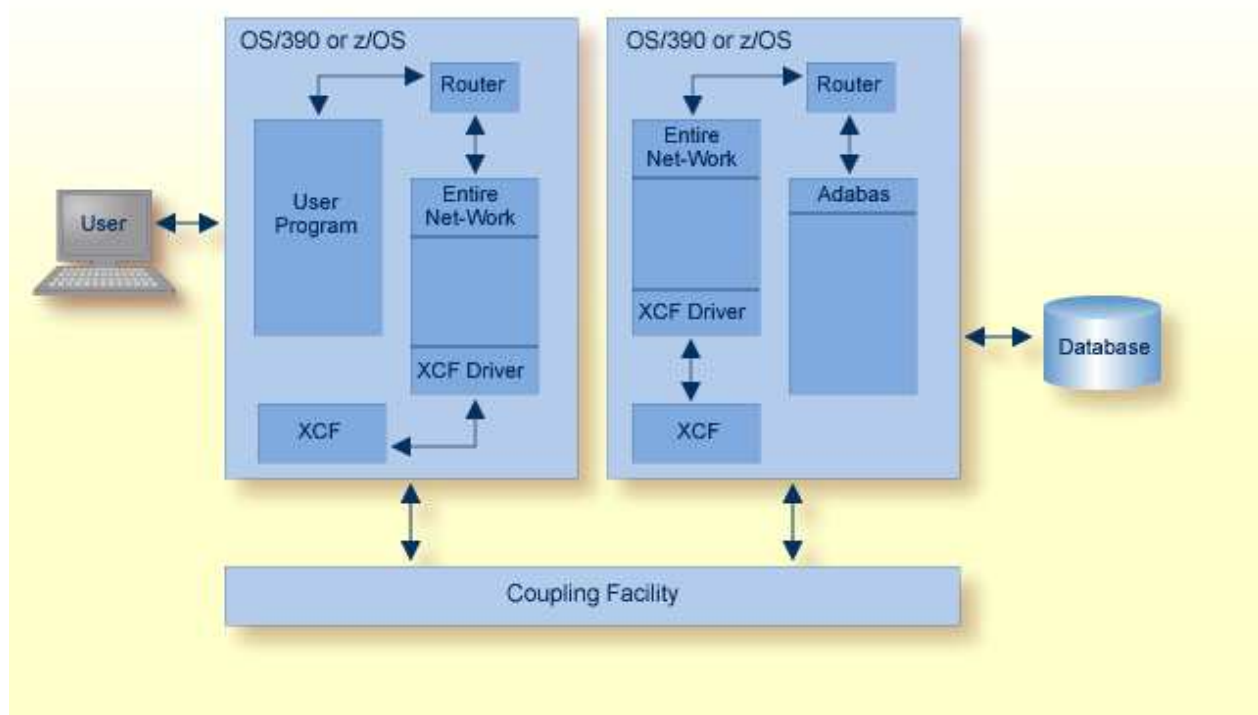
- XCF Line Driver
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XCF Line Driver

Actual network data traffic is controlled by the Entire Net-Work XCF line driver, an interface to IBM's cross-system coupling facility (XCF) that allows authorized applications on one system to communicate with applications on the same system or on other systems. XCF transfers data and status information between members of a group that reside on one or more operating system images in a sysplex.

The XCF line driver, which is installed on each Entire Net-Work node, provides high performance, transparent communications between operating system images that reside on different central processors in the sysplex. Multiple connections to other nodes are supported, and the line driver's modular design permits easy addition of new access method support to the system.

A "member" is a specific function (one or more modules/routines) of a multisystem application that is defined to XCF and assigned to a group by the multisystem application. A member resides on one operating system image in the sysplex and can use XCF services to communicate (send and receive data) with other members of the same group. Each Entire Net-Work node running the XCF line driver is identified as a different member in a group specifically set up for Entire Net-Work connectivity.



Adabas Cluster Services with Entire Net-Work

The simple configuration shown works as follows:

- The user issues a call to Adabas.
- The call is presented to the local router by the Adabas link routine, which finds that the requested service is not available locally.

- Instead of returning the response code 148 to indicate "service not available", the router passes the call to the locally executing Entire Net-Work communicator.
- After accepting the call, Entire Net-Work determines whether the requested service is available on the network. If it is not available, the local Entire Net-Work communicator returns response code 148 to the user to indicate "service not available".
- If the target is active somewhere on the network, the call (including all required buffers) is packaged as a message and sent across the network to the target node by the XCF line driver. If the network topology allows, the message may be routed through many intermediate systems before it reaches its final destination.
- On the target node, the receiving Entire Net-Work communicator accepts the message and presents the contained call to the locally running service through the router.
- The target operating system image regards the Entire Net-Work call as equal to any other call issued from within its own local environment and returns any required reply in the normal manner through the local router.
- The router passes the reply information to the requestor, which is the local Entire Net-Work communicator, in the same way it passes reply information to a local request.
- The reply information is then packaged for the return trip to the originating node's Entire Net-Work communicator, which uses its local router to pass the reply to the user's request back to the application.

Summary of Entire Net-Work Features

In an Adabas Cluster Services environment, Entire Net-Work allows users on various network nodes to query a logical database across multiple operating system images. Users access an Adabas cluster database as they would a conventional, single-node database.

A request to Adabas can be made from within an existing application, without change. The request is processed automatically by the system; the logistics of the process are transparent to the application.

Entire Net-Work uses Adabas-dependent service routines for the operating system interface as well as for interregion communication, thus avoiding incompatibility. The similarity between Entire Net-Work and Adabas means that the job control statements for running Entire Net-Work are much like those needed to run Adabas. For example, the EXEC statement invokes the ADARUN program for Entire Net-Work just as it does for Adabas, and the ADARUN parameters for Entire Net-Work are a subset of Adabas parameters.

All targets and services establishing or terminating communication with the network cause status information to be broadcast to all nodes, eliminating the need to maintain or refer to database or target parameter files at a central location.

Allowing only one Entire Net-Work task on each node enforces control over the network topology by maintaining all required information in one place. This avoids confusion in network operation and maintenance. If, however, more than one Entire Net-Work task is required, this can be accomplished by installing additional routers.

Each Entire Net-Work node maintains only one request queue and one attached buffer pool for economical use of buffer storage. All buffers that are not required for a particular command are eliminated from transmission. In addition, only those portions of the record buffer and ISN buffer that have actually been filled are returned to the user on a database reply. Software AG still recommends that you set the correct buffer sizes in the control block when coding direct calls; otherwise, unnecessary data may be transmitted.

Buffer size support in Entire Net-Work is comparable to that in Adabas, ensuring that all buffer sizes that are valid for Adabas can also be transmitted to remote nodes. Software AG recommends that you always run Entire Net-Work with the LU parameter value of 65535; this has no impact on actual storage requirements.