hp NonStop CORBA 2.3 software

product description

The Common Object Request Broker Architecture, or CORBA, is firmly established as one of the pillars of enterprise-level distributed object computing. In the past several years, CORBA has emerged as the infrastructure of choice for implementing enterprise-class object-oriented applications.

The NonStop Enterprise Division of HP has made significant investments in enterprise-level distributed technologies, enabling many of the world's leading companies to combine the productivity and heterogeneous computing strengths of distributed objects with the fundamental availability, scalability, data integrity, and manageability of the HP NonStop platform.

NonStop CORBA 2.3 software integrates three critical elements of business-critical distributed object computing:

- CORBA 2.3–conformant Distributed Object Transaction Processing Monitor
- CORBA 2.3–conformant Java™ Object Request Broker (JORB)
- Comprehensive Java Transaction Services (JTS) and Object Transaction Services (OTS) software

Three separate NonStop software offerings have been combined and significantly extended in the NonStop CORBA 2.3 software offering:

- NonStop Distributed Object Manager/MP (NonStop DOM/MP) software
- NonStop Java Transaction Services/Object Transaction Services (NonStop JTS/OTS) software
- NonStop Java Object Request Broker/MP (NonStop JORB/MP) software

features at a glance

- Enables interoperability with other CORBA 2.3–compliant ORBs
- Provides transactional interoperability between JTS- and OTS-compliant systems and NonStop servers
- Allows Java applications and components to benefit from the availability, scalability, and data integrity of the NonStop platform
- Implements additional common object services in the OMG specifications, including IIOP, Naming Service, Event Service, and Object Transaction Service

hp invent

standards-based interoperability

robust CORBA functionality, with a Java object request broker

NonStop CORBA 2.3 software delivers the features that make CORBA the leading server-side Object Request Broker (ORB) technology. It enables interoperability with other CORBA 2.3–compliant ORBs. CORBA–conformant features include all the mechanisms necessary to send requests and responses transparently between applications on different server platforms in a heterogeneous distributed environment.

The net result is that CORBA 2.3–compliant objects can execute without change on NonStop servers, which in turn bring their strengths to mixed platform environments.

state-of-the-art Java and object transaction services

To assist the development of reliable distributed object applications running on NonStop servers, NonStop CORBA 2.3 software provides implementations of CORBA 2.3 OTS and JTS. Together, these specifications define standard transaction management application program interfaces (APIs) for C++ and Java language–based applications, respectively. In fact, OTS and JTS implement extensive transaction service specifications that extend the CORBA model for transactional interoperability with existing CORBA-supported solutions.

The net result is that transactional interoperability (including two-phase commits) is ensured between different JTS- and OTS-compliant systems and NonStop servers.

Java language–specific object request broker

NonStop CORBA 2.3 software provides a CORBA 2.3–conformant, Java language–specific ORB. This allows Java technology–based applications and components to benefit fully from the availability, scalability, and data integrity of NonStop servers while interoperating with other CORBA-compliant ORBs on different server platforms.

object access to legacy environments

NonStop CORBA 2.3 software enables object access to legacy NonStop system–based applications. Through the use of object "wrappers," interfaces to existing applications that may not be object based can be developed without changing the existing logic. This makes it easy to modernize existing NonStop server applications quickly and extend them to new delivery mechanisms, including the Internet.

exploitation of the parallel power of NonStop servers

NonStop CORBA 2.3 software runs on high-performance NonStop servers, which combine a unique parallel processing architecture with RISC technology to deliver outstanding price/performance and reliability in open computing environments. The loosely coupled architecture of NonStop servers consists of multiple processors, dual interprocessor buses, dual-ported controllers, and fault-tolerant power subsystems. This architecture prevents all single and most multiple hardware or software malfunctions from disrupting an application and provides full data integrity for critical NonStop CORBA 2.3–enabled applications.

The NonStop Kernel operating system provides the ideal foundation for critical business applications to take advantage of the powerful processing, massive scalability, continuous availability, APIs, and system services offered by the NonStop platform.

new with NonStop CORBA 2.3 software

NonStop CORBA 2.3 software implements many new CORBA-related features that were not present in earlier versions of its previously nonbundled components. These features include, but are not limited to

- Full support for Interface Repository (IR) and IR service, allowing a client to access a server dynamically
- Object-by-value to facilitate creation of the broadest possible set of applications and to improve performance
- OMG-assigned profile tags to improve interoperability by identifying messages originating from NonStop CORBA 2.3 software
- Abstract interface support to simplify the customer design process
- Wide strings to support international character sets
- Support for LongLong data types
- Portable Java bindings to facilitate portability of applications
- Graphical management console (100 percent Java, so it can run on any workstation that has a recent Java virtual machine) used to manage execution environments

advantages of the world's most robust transaction processing environment

The NonStop Enterprise Division has developed a flexible and robust transaction processing environment built around the NonStop Transaction Services/MP (NonStop TS/MP) and NonStop Transaction Management Facility (NonStop TMF) infrastructure. This proven framework, which reflects 25 years of transaction processing expertise, underpins many of the world's highest-performance and most critical transaction processing environments—including the NonStop systems that handle most of the world's stock trades and ATM/POS transactions. NonStop CORBA 2.3 software enables the unsurpassed reliability and scalability of this infrastructure to be exploited in a CORBA-conformant distributed object environment, without special application programming.

dynamic workload balancing

NonStop CORBA 2.3 software takes advantage of NonStop TS/MP software to manage application workload. This allows users to add or delete server processes dynamically, providing better response times and optimizing server resources. NonStop CORBA 2.3–enabled applications can be distributed transparently across multiple processors in a NonStop server or multiple servers in a network of NonStop servers. Applications can then be scaled easily and massively by replicating processes on a single node or by adding server processes on other nodes.

comprehensive transaction protection

NonStop CORBA 2.3 software works with NonStop TMF software to ensure the integrity of distributed databases by monitoring transactions constantly to see that they are completed entirely, or not at all. It also coordinates updates to Enscribe or NonStop SQL databases.

NonStop TMF software provides transaction protection and recovery services to a variety of processing environments, including HP Pathway/iTS, NonStop Tuxedo, and NonStop ODBC Server. These environments can coexist with NonStop CORBA 2.3 software and simultaneously access a shared database—and still receive full transaction protection from NonStop TMF software.

NonStop TMF software also provides high-performance recovery services and enables NonStop CORBA 2.3 software to maintain database consistency in the event of a hardware or software malfunction or power outage.

CORBA 2.3 specifications in a NonStop environment

NonStop CORBA 2.3 software implements the core ORB and many of the common object services in the specifications of the Object Management Group (OMG), which manages the CORBA specification.

interoperability via Internet Inter-ORB Protocol

Chief among these specifications is the Internet Inter-ORB Protocol (IIOP) standard, which controls how distributed applications communicate over a TCP/IP network and enables interoperability among CORBA 2.3–compliant ORBs from various vendors. With IIOP, NonStop CORBA 2.3 software allows the Internet to be used for connecting to other ORBs.

robust RMI over IIOP

NonStop CORBA 2.3 software supports Remote Method Invocation (RMI) over IIOP. RMI is essentially a Java technology–compliant remote procedure call technology that enables Enterprise JavaBeans (EJB) objects, Java servlets, and similar objects to interact across systems in a distributed network. As such, RMI requires a protocol like IIOP.

Early investments in CORBA technology have resulted in a particularly robust IIOP implementation that, when layered with RMI, provides the scalability required for RMI-enabled interactions on a large scale.

scalability

Scalability defines how well (and how cost-effectively) a system grows as usage increases. NonStop CORBA 2.3 software contributes to scalability in network connections, ORB processes, and application processes. The HP Zero Latency Enterprise (ZLE) framework, for example, uses NonStop CORBA software to populate a database, reaching insert speeds of 75,000 transactions per second and beyond.

network connections

On some ORB platforms, a client must use a separate port number for each server to which it connects. This can dramatically restrict the number of clients that connect to the ORB. NonStop CORBA 2.3 software does not have this limitation; clients can use a single port number to connect to any number of servers on the same system.

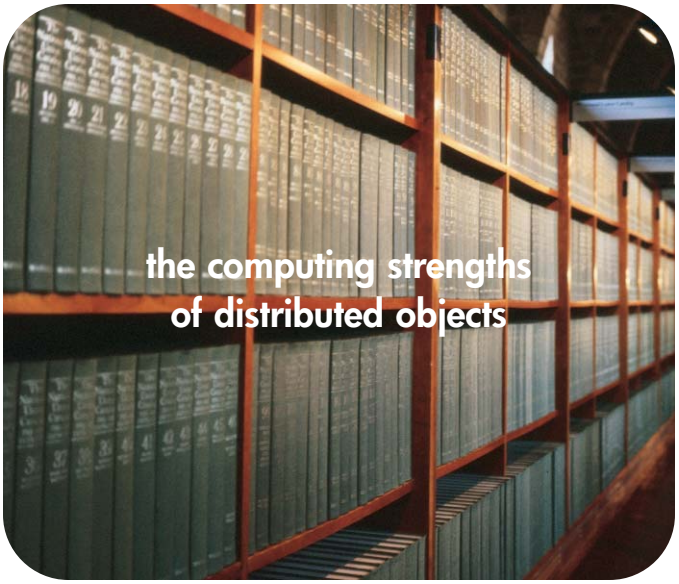
ORB processes

With NonStop CORBA 2.3 software, you can increase the ORB's capacity without disturbing applications that are running. Comm servers (processes within the ORB) can be added to support growth in request traffic. Likewise, TCP/IP processes can be increased to provide more port numbers.

A new client can connect to the ORB on any of its existing ports. No configuration change is required on either the client workstation or the NonStop system.

application processes

Application servers written to CORBA 2.3 specifications can run as NonStop TS/MP server pools, in which multiple processes automatically run the same application logic on different processors. The number of servers in the pool can be specified as a configuration option, or NonStop TS/MP software can automatically vary the number of servers and distribute work among them as required for load balancing.



stateless and stateful object invocations

NonStop CORBA 2.3 software can run server processes as NonStop TS/MP server pools. This allows a number of processes to act as one logical server, where the least busy server gets a new unit of work, thus providing automatic load balancing. NonStop TS/MP server pools support both stateless and stateful requests. A stateless request can go to a different server instance on each invocation. A stateful request initially goes to a free server instance, and all subsequent invocations go to the same server. NonStop CORBA 2.3 software provides the application programmer with both choices, allowing flexibility in server-side object design.

interface definition language compiler

As an integral part of implementing distributed objects on the NonStop platform, NonStop CORBA 2.3 software supports the CORBA Interface Definition Language (IDL). IDL is the means by which objects tell their potential clients what operations (methods) are available and how they should be invoked. IDL defines the types of objects, their attributes, the methods they export, and the method parameters.

NonStop CORBA 2.3 software integrates an IDL compiler that processes IDL files and produces language skeletons for the implementation server classes. A programmer then simply supplies the code that implements the methods in the skeletons to create the desired server classes. The integrated IDL compiler also generates all the code necessary to enable transparent client interactions with potentially remote objects. Template files in the compiler simplify and standardize application development and portability.

C++ and portable Java language bindings and mapping

NonStop CORBA 2.3 software provides C++ and portable Java language bindings and mapping (required for EJB components) for ease of development and IDL portability. Whereas the IDL defines the interface to an object, client programs that use the object and the object implementations themselves are not written in IDL. Instead, they are written in languages in which language bindings have been defined.

both dynamic and static invocation interfaces

NonStop CORBA 2.3 software supports a dynamic as well as a static invocation interface. This allows a client program to build and invoke requests dynamically on objects at runtime. In contrast, the static invocation interface requires the client application programmer to know the object interface at compile time. Supporting both static and dynamic invocations allows flexibility in application system design.

support for OMG-defined services

In addition to the base ORB, NonStop CORBA 2.3 software provides three services defined by OMG:

- The *Naming Service* "advertises" services, allowing client programs to look up object references by name rather than through embedded object references within the client. It also includes the Interoperable Naming Service extension, which supports URL naming. In implementing OMG's Interoperable Naming Service, NonStop CORBA 2.3 software works with other naming services.
- The *Event Service* allows objects to register or unregister their interest in specific events by defining a well-known object called an event channel, which collects and distributes events among components that are unaware of one another.
- The *Object Transaction Service* enables two-phase commits between CORBA-conformant systems. It also provides JTS bindings for Java applications.

ordering information

Licensing is on a per-processor basis. For a new installation, order one license for each of the first four processors in a system, and one license for each subsequent processor in a system.

product ID	description
SE65V1	NonStop CORBA 2.3 software (each of 2 to 4 processors)
SE66V1	NonStop CORBA 2.3 software (each of 5 to 16 processors)

specifications

system requirements

Hardware	Any NonStop S-series server
Software	NonStop Kernel operating system, Release Version G06 or later
	Open System Services (OSS) operating system environment
	NonStop TS/MP software

compatible software development tools

Native C++ compiler

For more information, go to www.hp.com/go/nonstop.

October 2002, first published 2000.

5981-3893EN