IBM

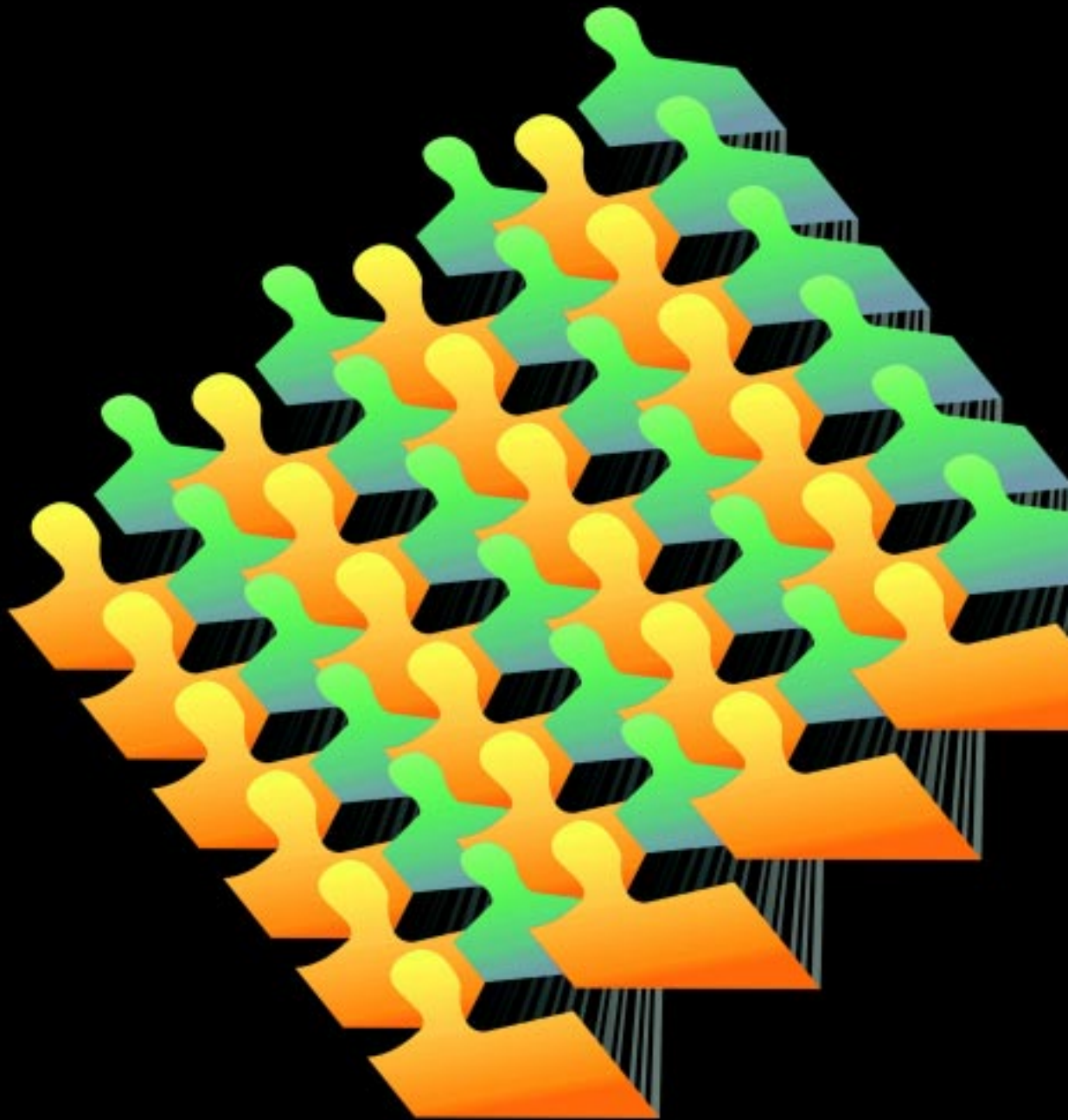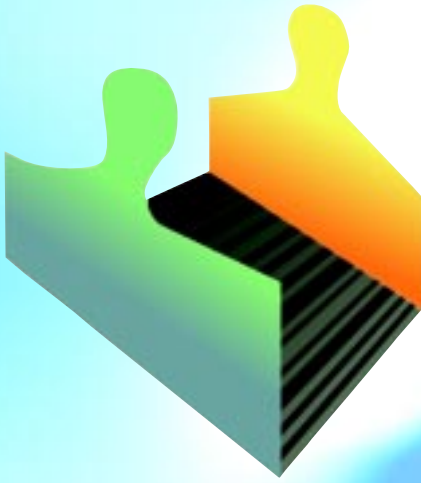# *LANDP… flexible integration for a fast-moving future*

*Enabling evolutionary
migration from existing
LANDP-based client/
server environments to
e-business technologies*

## Businesses strive to automate processes in order to save costs and meet increasing customer expectations.

Information technology is expected to deliver competitive advantage through improved customer service and enhanced customer-facing computer networks. At the same time, new technologies such as the Internet are revolutionising the marketplace.

To respond to these challenges, organisations are having to enhance their front-office systems. However, most organisations want to protect the investment that they have already made in hardware and applications, and will migrate to new technologies in stages.

IBM LANDP* (Local Area Network Distributed Platform) can help maximise these opportunities. It enables organisations to support and integrate existing resources effectively, develop new applications more easily, and respond quickly to both technological and business changes. To do this, LANDP uses a transaction processing infrastructure which interconnects devices, applications and databases within a distributed client/server environment incorporating new e-business technologies.

Designed and developed for retail banking, LANDP is a tried and tested solution which is used extensively in the retail banking industry worldwide, by both large and small organisations.

LANDP should be of interest to organisations developing or enhancing applications where:

• Multi-platform support for mixed LANDP versions is required for staged migration

• Operations are transaction oriented, and where access to real-time information is required

• Departments or branches operate similar yet self-contained systems, and may be long distances apart

• Data needs to be distributed between departments and a central location

• Industry-specific input/output equipment is used, such as automatic teller machines, passbook printers and card readers

• Distributed processing and resource sharing is required to provide opportunities for improved efficiency and cost-effectivenesss.

**LANDP is a mature product, proven in demanding situations where the highest levels of performance and reliability are required. Through LANDP Version 5 you can obtain:**

• An effective infrastructure for developing improved service automation that alleviates the need for making constant changes to applications

• A clear migration path to e-business solutions

• Versatile client/server technology – LANDP supports multi-platform networks running a combination of Windows 2000, Windows NT, OS/2 and DOS

• Support for migration to new platforms – LANDP's cross-platform capabilities enable the same applications to operate across multi-platform workgroups

• Fast development of portable applications – LANDP provides a common API across all platforms, which facilitates application development. LANDP Version 5 supports appropriate VisualAge application development tools including support for applications to be written in Java

• The benefit of IBM's experience in supporting LANDP customers worldwide.

# LANDP Version 5 offers enhanced functionality

LANDP Version 5 offers significant enhancements across all supported platforms, including integration with e-business technologies, provision of new servers and improvements to existing servers. In addition, LANDP Version 5 enhances the functionality available on Windows NT.

LANDP offers excellent protection for your IT investment, through a straightforward growth path in LANDP applications. It also provides links between existing and future technologies that can exploit a mixture of platforms. LANDP is well positioned to enable development of both packaged and tailored solutions by providing support for the following strategic technologies:

• Java** – LANDP's enhanced Java support allows exploitation of the capabilities of Java technology, for example:

  - Platform independence for LANDP applications can be provided by writing them in Java.

  - An expanded LANDP Java capability permits remote client access to LANDP services using Internet technology.

  - Use of the LANDP Java eXtensions for Financial Services (J/XFS) for the Java platform wrappers enables both Java and LANDP applications to co-exist and share LANDP supported devices. They also provide support for legacy financial I/O devices under J/XFS.

• Server managed clients – LANDP support for WorkSpace On-Demand and Windows Terminal Server offers significant system management benefits through centralised control. This can reduce the total cost of ownership.
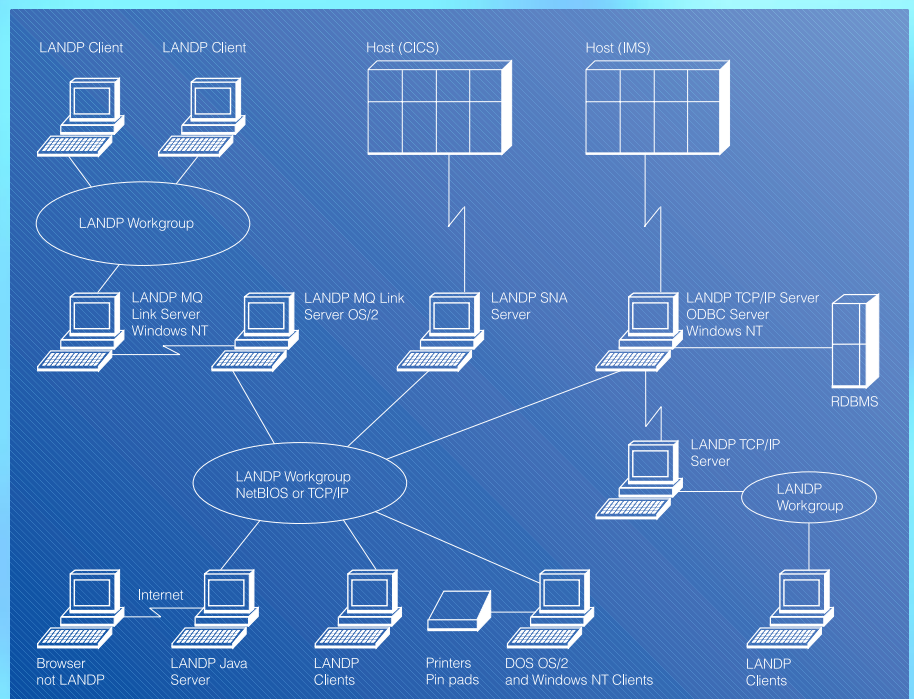
• Rapid Application Development (RAD) – LANDP provides support for application development (AD) tools, such as those in the VisualAge family, which speeds development or enhancement of LANDP GUI applications.

• Open Database Connectivity (ODBC) – an open standard interface providing common access to relational databases, allowing flexibility in choice of database vendor.

• MQSeries – LANDP enables integration with MQSeries networks through extensions to the LANDP common API. An example of this is communication between remote LANDP workgroups, or between a LANDP workgroup and a host system.

• TCP/IP – LANDP facilitates migration from SNA to TCP/IP networks without the need to change your existing LANDP SNA applications.

Service Availability Manager (SAM) improves the availability of LANDP services by supporting the automated re-routing of LANDP requests to a back-up server. The use of SAM with the new XLR function of the Shared File Server provides faster, automatic switching between primary and back-up Shared File Server databases, in the event of a system failure.

LANDP Version 5 also increases the scalability of the LANDP workgroup, allowing more workstations to share common resources.

These new features help our customers to maintain the vitality of their investments in LANDP-based solutions.

*LANDP Version 5 connectivity*



LANDP Client   LANDP Client   Host (CICS)   Host (IMS)

LANDP Workgroup

LANDP MQ Link Server Windows NT   LANDP MQ Link Server OS/2   LANDP SNA Server   LANDP TCP/IP Server ODBC Server Windows NT

RDBMS

LANDP Workgroup NetBIOS or TCP/IP

LANDP TCP/IP Server

LANDP Workgroup

Internet

Browser not LANDP   LANDP Java Server   LANDP Clients   Printers Pin pads   DOS OS/2 and Windows NT Clients   LANDP Clients

## The versatility of client/server technology

The main elements contributing to the continuing success of LANDP are its uniform client/server mechanism, common API and extensive functionality.

The LANDP client/server mechanism logically connects workstations and associated peripherals such as printers and other devices to form a LANDP workgroup. Within the workgroup, any operation which requests services is referred to as a client, and any provider of services is a server. The client/server mechanism transparently routes the request to the server for processing, and then directs the reply back to the client. Each LANDP workgroup, which may be a network of computers within a department, branch, or retail outlet, can integrate processors running the following industry-standard operating system software: Windows 2000, Windows NT, OS/2 and DOS. Any workstation can logically operate as a client and/or a server. LANDP servers can also act as clients to other LANDP servers.

## An effective tool for branch automation and integration

LANDP facilitates branch automation by enabling:

• Branch workstations to communicate with each other and with host computers

• The integration of applications using differing technologies

• The sharing of information contained in databases, as well as resources such as printers, magnetic stripe readers (MSR) and personal identification number (PIN) pads.

While supporting proprietary IBM devices as standard, LANDP also offers solution pathways which can incorporate specialised equipment from many different vendors. With LANDP, you can choose the hardware, application software and system software which best suit current needs, and install them in the same workgroup knowing that they will function smoothly together.

LANDP Version 5 can be considered by customers moving to e-business technologies. It provides the capability to expand system performance as requirements grow, in order to incorporate the additional functionality of ODBC database access, or to co-exist with MQSeries as part of an enterprise-wide business solution.

LANDP includes a comprehensive set of servers with simply-invoked APIs such as communications services, data management services, system management services and input/output device support. The provision of these enables application developers to focus on the business functionality of their solutions.

## Flexibility to meet new market requirements

IBM is committed to the future expansion of the standard LANDP servers to support a widening range of services, in order both to anticipate and respond to evolving customer requirements. In addition, the open system environment created by LANDP enables customers to purchase or write their own servers, to answer their specific system requirements.

Another important benefit of LANDP is the transparency which it provides in application development. The common LANDP API provides programmes with the flexibility to develop applications independent of the underlying operating systems and without having to fully understand the technicalities of resources supported by LANDP servers, such as SNA and financial devices.

## Project support from an understanding partner

Any change affecting mission-critical systems naturally demands careful consideration and a clear understanding of the potential business benefits. To assist you in this process, the resources of IBM are at your disposal. In projects involving LANDP this support is based on the accumulated experience of many successful customer installations. For example, the implementation of a LANDP solution often involves maintaining host connections and uninterrupted support for existing applications. IBM can assist with the smooth integration, even if roll-out is across an organisation with many branches.

The future development of LANDP, together with the worldwide marketing and technical back-up, are co-ordinated by IBM Hursley Laboratories which also develop CICS and MQSeries.

Whether you deal with an IBM branch office or an IBM Business Partner, experienced professionals will always be on hand to explain the service options available. They will help you determine what you want to achieve, and discuss ways of overcoming problems and exploiting new business opportunities, thereby helping you to move forward confidently and quickly.

# Technical overview

## Communications services

Communications from LANDP applications to host systems are handled through a series of wide-area communication servers which provide the communication services required by workstation applications or other servers. These include:

- *MQSeries Link server* provides an interface to MQSeries Queue Manager to enable the integration of LANDP applications into MQSeries-based solutions

- *SNA server* provides host communication support for LANDP applications, and is often used for communications between these and host-based applications, such as CICS or IMS, using LU0

- *Program-to-program (PPC) server* allows a LANDP application to communicate with a partner application through an SNA LU 6.2 session

- *TCP/IP wide area communications server* provides emulation of the SNA and PPC server API's to enable migration from SNA to TCP/IP networks without impacting the existing LANDP and partner applications. The LANDP TCP/IP server interfaces directly with the TCP/IP environment configured on the workstation

- *Native X25 communication server* provides program-to-program, high-level, protocol-free communication using X.25 data link control. It is useful when communicating with another LANDP workgroup or single workstation, or with non-SNA computers through X.25 networks

- *Emulators* – there are two emulators: one to allow access to host 3270 applications and to support HLLAPI, and the other to support host printing to workstation-attached printers.

## Data management services

LANDP provides a series of servers for managing data in a LANDP workgroup:

- *Shared File server* enables multiple applications to access a database and share files simultaneously, at either a file or record level, but preventing one user from changing a record while it is being changed by another

- *Query server* provides relational database services to LANDP applications and extends the functions of the associated database management systems to the LANDP workgroup

- *ODBC server* provides access to any database for which conforming ODBC drivers are available, through the LANDP Query Server API in 'query mode'

- *Electronic journal server* provides a convenient way of storing the data from all transactions in a LANDP workgroup during a chosen business period.

- *Store-for-forwarding server* stores transactions intended for a host system, thereby helping to maintain service if communication between the workgroup and the host is temporarily lost

- *Forwarding server* complements the store-for-forwarding server to ensure subsequent efficient transmission of records to the host computer.
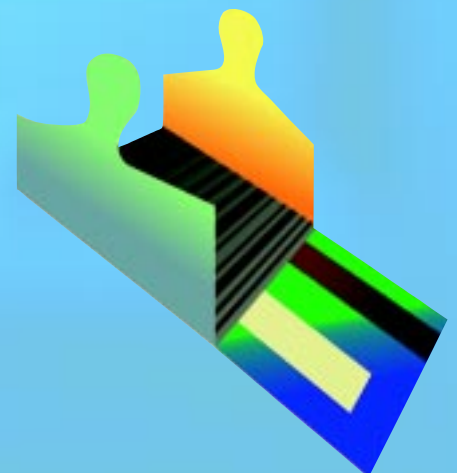
## System management services

System Management Services are not only the key to branch systems reliability. They also provide the ability to install and control new applications and configuration changes remotely.

- *System manager server* provides features such as:
  - User identification and control functions
  - User profile and application data maintenance
  - Date and time synchronisation
  - LANDP workgroup common data maintenance
  - Retrieval of defined record structures
  - Alerts management
  - System and user log management
  - Operator messages support
  - Back-up global data

- *System manager operator* provides access to:
  - System manager server data
  - The management of workgroup facilities

- *Operator interface* is an optional component of LANDP for DOS which allows the workstation to interact with the following LANDP for DOS components:
  - Printer manager server
  - 3270 emulator
  - 3287 printer emulator

- *Local resource manager server* enables applications to use LANDP's common API functions to interact with specific LANDP for DOS components, where the applications and components are installed in the same workstation as the local resource manager server

- *Remote change management services (RCMS)* manages the software and data resources for a distributed system, for example when interfacing to Tivoli NetView.

*The LANDP quick reference chart reflects the main features in LANDP Version 5, as well as the supported environments.*

| Servers and System Applications | OS/2 | Windows NT and 2000 | DOS |
|---|---|---|---|
| **Wide area communication servers** | | | |
| MQSeries link server[1] | C/S | C/S | C |
| SNA server supporting LU 0, LU 1, and LU 2, on SDLC, IEEE 802.2, and X.25 | C/S | C/S | C/S |
| PPC server (LU 6.2)[1] | C/S | C/S | C |
| TCP/IP wide area communication server | C/S | C/S | C/S |
| Native X.25 communication server | C/S | C | C/S |
| 3270 emulator | ✓[2] | ✓[2] | ✓ |
| 3270 emulator high and low level APIs | ✓[2] | ✓[2] | ✓ |
| 3287 printer emulator | ✓[2] | ✓[2] | ✓ |
| **Data management servers** | | | |
| Shared file server | C/S | C/S | C/S |
| External logging replicator (XLR) | C/S | C/S | C |
| Query server | C/S | C | C |
| ODBC server | C | C/S | C |
| Electronic journal server | C/S | C/S | C/S |
| Store for forwarding server | C/S | C/S | C/S |
| Forwarding server | C/S | C/S | C/S |
| Shared DOS directory services | na | na | C/S |
| Shared file distributor server | C/S | C | C |
| Shared file replicator server | C/S | C | C |
| **Application integration** | | | |
| CICS OS/2 call interface server | C/S | C | C |
| DDE access server | C/S | C | C |
| Batch machine | C/S | C | C |
| **System management** | | | |
| System manager server | C/S | C/S | C/S |
| System manager operator | ✓ | na | ✓ |
| Operator interface | na | na | ✓ |
| Local resource manager | na | na | ✓ |
| RCMS server | C/S | C/S | C/S |
| **I/O devices[3]** | | | |
| 4712 server | C/S | C | C/S |
| 4722 server | C/S | C/S | C/S |
| 4717 magnetic stripe reader/encoder server | C/S | C | C/S |
| 4718 PIN pad server | C/S | C | C/S |
| Print manager server | C/S | C/S | C/S |
| 4009 universal banking printer | C/S | C/S | C/S |
| 4710 forms/passbook printer | C/S | C | C/S |
| 4748 DBCS printer | C/S | C/S | C/S |
| 4770 ink jet transaction printer | C/S | C | C |
| 4772 universal financial printer | C/S | C/S | C/S |
| 4777 magnetic stripe reader/encoder | C/S | C/S | C/S |
| 4778 PIN pad magnetic stripe reader | C/S | C/S | C/S |
| 9055 model 001 DBCS document printer | C/S | C/S | C/S |
| 9055 model 002 SBCS document printer | C/S | C/S | C/S |
| 9068 model S01 SBCS passbook printer | C/S | C/S | C/S |
| 9068 model D01 DBCS passbook printer | C/S | C/S | C/S |
| 9069 transaction printer | C/S | C/S | C/S |

| Servers and System Applications | OS/2 | Windows NT and 2000 | DOS |
|---|---|---|---|
| **Financial self-service support** | | | |
| 4721 document printer | C | C | C/S |
| 4731/38/39 P-model personal banking machines | C/S | C | C/S |
| 4733 teller assist unit | C/S | C | C/S |
| 4737 transaction station | C/S | C | C/S |
| **Workgroup networking** | | | |
| NETBIOS      Token-Ring | ✓ | ✓ | ✓ |
| Ethernet | ✓ | ✓ | ✓ |
| TCP/IP      Token-Ring | ✓ | ✓ | ✓ |
| Ethernet | ✓ | ✓ | ✓ |
| **Other features/facilities** | | | |
| Coexistence with Netware | ✓ | na | ✓ |
| Session level encryption for RCMS, and 3270 | C/S | C | C |
| and 3287 emulation (LU O, LU 1, and LU2) | ✓ | na | ✓ |
| 4707 display | sf | na | ✓ |
| 50-key keyboard | sf | na | ✓ |
| VDM relay | ✓ | ✓ | na |
| Customisation tool | ✓ | ✓ | ✓ |
| Trace tools | ✓ | ✓ | ✓ |
| File transfer | ✓ | ✓ | ✓ |

[1]   PPC server on Windows NT, and MQSeries
      link server, delivered mid-2000 by the
      service process
[2]   Supported in a Virtual DOS Machine (VDM)
[3]   The availability of hardware devices varies
      according to geography.

## Legend

C/S = client and server function
C   = client only
✓   = function available
na  = not applicable
sf  = standard feature for the operating
      system.

## Input/output device support

LANDP supports a wide range of input and output devices, including printers, magnetic stripe card readers and personal identification number (PIN) pads. Refer to the quick reference chart for details of which servers are used to support the various I/O devices.

The LANDP J/XFS wrapper provides mapping of the J/XFS API to the LANDP API. This enables the sharing of financial I/O devices between LANDP and Java applications. J/XFS is an open standard for financial I/O devices in the Java environment.

IBM will continue to develop extensions to the range of peripherals that are directly supported. Other devices can easily be integrated through the common API by systems integration organisations.

## Built-in facilities and utilities

LANDP includes the following built-in facilities and utilities:

• File transfer facility, to transfer files to and from a host computer

• 4707 monochrome display support

• Multiple virtual DOS machine relay (MVDM) for OS/2 and Windows NT, which allows DOS applications and emulators to be run in OS/2 or Windows NT workstations. This enables easy migration of existing DOS applications without the need to re-write or compile them

• Utility programs – a wide range of utility programs is provided to facilitate LANDP management, data management and problem determination.
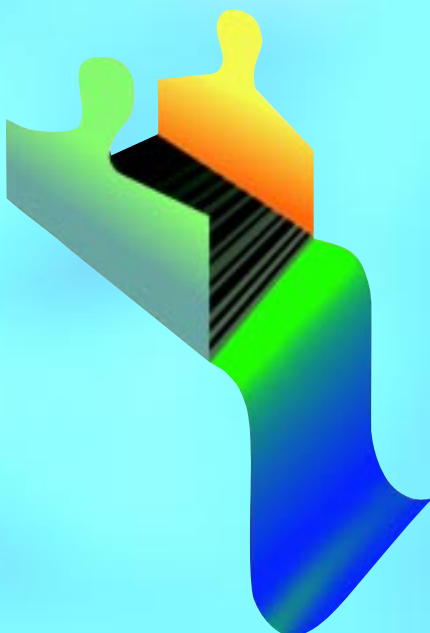
## System requirements

### Hardware requirements
LANDP Version 5 supports appropriately configured IBM PC, or IBM compatible PC machines running the prerequisite software.

The support for workgroup internal and external communication adapters is provided by the underlying communication software. These adapters must be installed in the appropriately configured machines according to the adapter specifications and the corresponding network adapter software specifications.

### Software requirements
In order to install, customise and execute LANDP Version 5, one of the following operating systems is required:

• LANDP Version 5 OS/2 workstations require IBM OS/2 Warp Version 4 or later

• LANDP Version 5 DOS workstations require IBM PC DOS 2000

• LANDP Version 5 Windows NT workstations require Windows NT Version 4 or Windows 2000

Related communications and other software may be needed depending on particular installation requirements. Refer to the LANDP Introduction and Planning Manual for details.

### Ordering information
Specify Program Number 5639-I90 or Part Number 0781197 when ordering LANDP Version 5.

The LANDP Version 5 CD-ROM includes support for OS/2, Windows NT and DOS platforms. The CD-ROM includes technical documentation relating to the installation and development of LANDP applications.

### For further information
For further information on LANDP Version 5 visit the LANDP Web site at: http://www.ibm.com/software/ts/landp

LANDP has a Web-based Newsgroup which enables customers to share information with each other and with members of the LANDP development team. Access is via: news://ncc.hursley.ibm.com/ ibmpub.landp.discussion

For information about the technical support which can be provided by the LANDP development team contact LANDP@uk.ibm.com

### Summary
LANDP Version 5 provides customers with flexible integration for a fast-moving future. It enables organisations to benefit from the advantages of moving from established client/server environments to e-business technologies. By so doing, it can help them save costs, improve their levels of customer service and thereby increase their competitiveness.