DATA SHEET

Dprint (BS2000)
Version 1.2
Distributed Print Services

Dprint implements distributed print and administration functions in a network composed of BS2000 and Unix systems, connected via TCP/IP, ISO or NEA (TRANSDATA) transport protocols. With its symmetrical client/server architecture, Dprint performs on a BS2000 host both the client and server functions realized in a similar way on the Unix system using corresponding products.

Moreover, PCs in the network can also be integrated into this concept, enabling a PC client to initiate a print job on a (high-speed) printer connected to a remote host (LAN-to-Host printing).

This design of Dprint allows all the systems connected in the interconnected network to use any accessible printer as an output device. At the BS2000 end, this function is provided through the support of the spool subsystems RSO (for output to distributed (LAN/PC) printers) and SPS (output to central APA high-performance printers) at the server host.

However, Dprint not only supports network-wide platform-independent printer addressing, but also the automatic distribution of print jobs according to optimizing criteria based on current loads – by automatic server selection, flexible pool creation and optional resource transport. In this way, Dprint can be implemented to cover a wide range of uses – from load distribution in homogeneous (local) BS2000 spool networks for the optimum utilization of expensive printer resources (with the special case VM2000), to the central print server solution of BS2000 high-performance printer through decentralized Unix system and PC clients.

A convenient administration interface is provided for central installation and management of all objects in a Dprint configuration.

The consistent orientation towards open standards, both in the area of the user interface and in connectivity, meets the requirements for the future addition of additional partner systems.

Overall, therefore, Dprint provides the ideal basis for the flexible implementation of an enterprise-wide printing concept in the BS2000 environment.
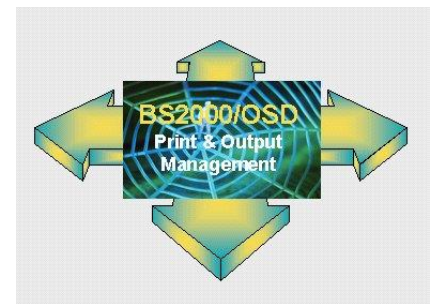
Functional Description

A) Cluster Model

The topology of a computer network with Dprint in BS2000 is based on the concept of the cluster. A cluster is the grouping of homogeneous, interconnected computers into a logical unit, characterized by the following features:

■ *Single System View*
A Cluster presents a transparent area to the end user of Dprint – i.e. the arrangement of printers within the cluster is not (generally) visible to him. Print jobs are distributed via automatic server selection.

■ *Single Point of Administration*
All administration functions including cluster configuration are performed centrally at a master server in the cluster, by a specially privileged cluster administrator.

When Dprint is installed, the definition of one or more clusters may be flexibly adapted to the organizational and space requirements of the user, taking into account these characteristics and performance aspects.

Interoperability between clusters / with third-party systems, is achieved using a so-called gateway server within the cluster.

The reference model for distributed printing among heterogeneous partners was the ISO-DPA standard (Document Printing Architecture) 10175, which also forms the basis for future interconnection with other third-party systems.

B) User Interface

The user interface of Dprint was created using an object oriented philosophy, providing uniform operations on all relevant objects (print jobs, printers, clusters, servers..).

The central user interface is the PRINT-DOCUMENT command used to transfer print jobs to Dprint. The following control options are available to the user:

- No explicit details of destination − i.e. automatic server selection within the cluster.
- Selection of a printer pool where permitted.
- Addressing of a remote BS2000 cluster / third-party system where permitted.
- Details of whether associated print resources belong to the client or the server. In the former case, the resource transfer to the server occurs automatically.

The functions of the PRINT-DOCUMENT are also available as a program interface.

In addition, by calling further commands, the user is able to monitor and alter print jobs already sent. In particular, there are the following options:

- Cancel a print job
- Modify certain print parameters
- Obtain details of print parameters
- Obtain information on the status of a print job

In addition, the user is able to obtain information on all the printers he is able to use in a Dprint configuration.

C) Administration Interface

The administration of the objects in a Dprint configuration is governed by a privilege concept. Of course, inside a BS2000 server connected to the network, the local objects may continue to be managed by the system administrator. The function of spool administrator can also be distributed (using the software product SECOS).

For managing a cluster, the concept of the cluster administrator has been introduced, the functions of which are performed by the spool administrator of a defined master server in the cluster. From there, he is able not only to configure and manage objects in his own server, but also those of all other servers within the cluster ('Single Point of Administration').

The following are among the specific functions of the cluster administrator:

- Setting up and dynamic modification of the cluster configuration with the associated objects - host, server, printer and printer pool.
- Defining access authorization to clusters and associated servers, to protect against unwanted access from outside.

Special instructions are provided in the spool service program SPSERVE. A high level of availability is ensured in the Dprint network, because the functions of vital components, such as the central master / server, are automatically transferred to an auxiliary server on breakdowns (prevents a 'Single Point of Failure').

D) PC Integration

Integration of PC clients plays a special role in the Dprint concept. Whereas print output from a BS2000 host to a PC printer ('Host-to-LAN' printing) has been supported for a long time via RSO, the reverse route of 'LAN-to-Host' printing from the PC client to the BS2000 host is a significant feature of Dprint.

Dprint has therefore been expanded to include the following components:

- BSD/LPD gateway for receiving print jobs from the client systems (not necessarily just Windows) which support the open BSD (Berkeley Software Distribution)/LPD (Line Printer Daemon) protocol.
  As this is a porting of the existing Xprint solution, unlike with the rest of the Dprint functionality, the subsystem POSIX-BC is required but no FT product is necessary.
- PageStream printer driver for Windows, comprising a PC component and a BS2000 component.
  A (printer-independent) data stream is generated in the PC, which after transfer to BS2000 is converted to the AFPDS or EXCCW data stream of the relevant (graphics-capable) target printer. This driver is also a component of the products available in the market.

The end-user interface on the PC is fully integrated into the usual printing interface. The only difference is that print jobs are output to a remote BS2000 printer rather than to a local PC printer. This means that high-speed printers can be used wherever it makes sense, e.g. for standard letter applications, etc.

Program Description

Dprint is composed of four functional units, corresponding to its client/server structure:

- *Client*
  The Client provides access to print services. It validates and formats print jobs, selects a suitable server and transfers the respective metadata. It also includes the administration interface.
- *Server*
  The Server is responsible for managing and scheduling print jobs, and transferring them to the supervisor for printing. It also provides for diversion and status queries of print jobs.
- *Supervisor*
  The Supervisor controls the actual print process, i.e. the flow of data to the printer and error handling.
- *Common Services*
  This includes all basic services, ie. the managers for configuration, communication, file transfer and resources.

These four functional units are in turn collected into two components, which are ordered separately:

- *DPRINT-CL*
  This component includes the client and common services and the BSD/LPD gateway and must be installed in all BS2000 servers in the print network.
- *DPRINT-SV*
  This component includes the server and supervisor and is required (as well as DPRINT-CL) in all BS2000 servers with printer devices planned to be made accessible via Dprint.
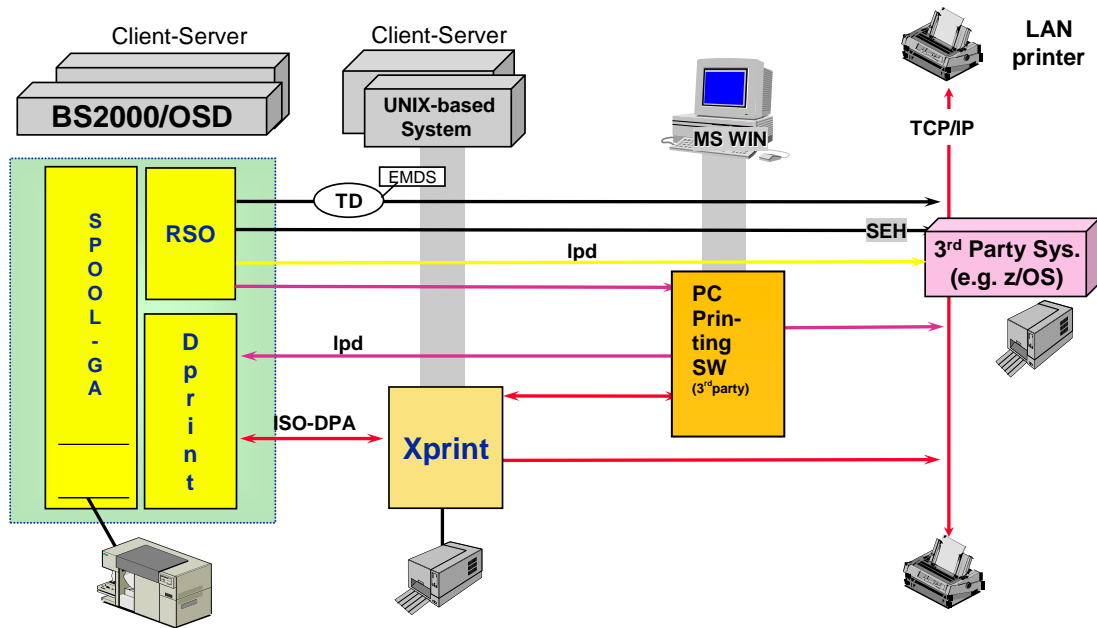
Distributed Print Services - Platforms and Components

TECHNICAL DETAILS

DPRINT V1.2

Technical data

Hardware

BS2000 Business Server
with network connection

Software

BS2000/OSD-BC V6.0 or OSD/XC V2.0 or higher
openNet Server V3.0 or higher
openFT with openFT-AC V8.0 or higher
for Unix systems: Xprint
for PC clients: available products in the market

Operating mode

Interactive and batch mode

Implementation language

SPL, Assembler, C, C++

User interface

Commands English
Message texts English/German (optional)

Installation

By the user, in accordance with the user guide / release notice

Documentation

Dprint User Guide

Training

See course offer at:
http://ts.fujitsu.com/training

Conditions

This software product can be purchased by the customer against a single payment or leased in accordance with the conditions for the use of software products.

Ordering and delivery

This software product may be obtained from your local Fujitsu Technology Solutions GmbH regional office.

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