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TFORMer Server

Reporting-, Labeling- and Output-Server

Version 6.0

White Paper

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Content

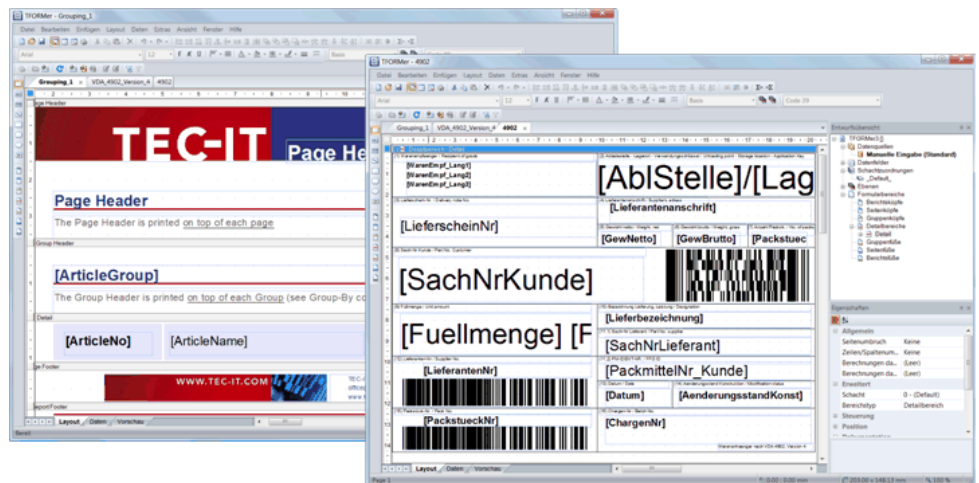
Content	2
TFORMer Server	3
Print-Server and Output-Management	3
Highlights	4
Saves Time	4
Reduces Costs	4
Unified Workflow	4
Barcodes	4
Reusability	4
Independence	5
Reliability	5
Automated Output	5
Centralized	5
International Applications	5
Principle	6
Workflow	7
TFORMer Designer	7
TFORMer Server	8
TFORMer Monitor	9
Host Connectivity	10
Overview	10
Connectors	11
File Formats	12
Printing and Output Creation	14
Output Formats	14
Printers and Output Channels	15
Operational Advantages	16
Reliability	16
Change Management	16
Stability	16
Watchdog	16
Data Sheet	17
Screen Shots	18
TFORMer Designer – Document Design and Configuration	18
TFORMer Designer – Preview with Live Data	18
TFORMer Monitoring – Operation	19
Licenses	20
Demo Versions	20
TFORMer Designer	20
TFORMer Server	20
Contact	21

TFORMer Server

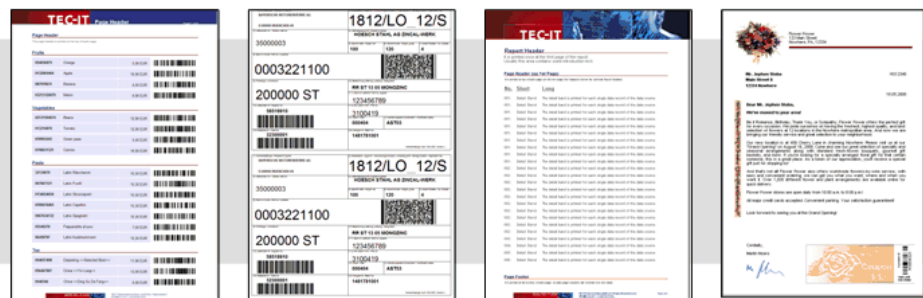
Print-Server and Output-Management

Design, printing and automated output of documents, reports, forms and barcode labels most often comprehends massive time and money savings potential. Powerful and flexible software tools are needed whenever documents must match internal or external requirements (e.g. specific industry standards, customer requirements corporate identity).

The software suite *TFORMer* covers all industrial output requirements as well as aspects of business-style documents – it is the optimal solution for all type of output.



- Printing and Output
- Centralized
 - Arbitrary Documents
 - PDF
- PostScript®
 - HTML
 - Images
 - ZPL-II



TFORMer combines the features of reporting software with the functionality of barcode- and label printing tools. Thus *TFORMer* represents a universal output solution; it can be adjusted to generate exactly the type of output as required by your application. Electronic documents like HTML, PDF and email are supporting or replacing conventional paper-based workflows since years. *TFORMer* considers such requirements without restricting your flexibility.

This document focuses on *TFORMer* Server. The document editor *TFORMer Designer* is described in a separate document.

Highlights

Saves Time

TFORMer Server comes with predefined, ready-to-use document templates (e. g. for the areas automotive and transport; VDA, AIAG, Galia, Odette, Belom, TNT®, DHL®, UPS®, FedEx®, GS1, ...). These templates can be printed immediately, you benefit from reduced efforts.

Reduces Costs

TFORMer Server minimizes efforts when it comes to document design. Reports, lists, tables and labels are designed graphically by the users themselves. No programming or special know-how is required.

Unified Workflow

TFORMer Server offers a centralized, enterprise-wide output solution covering industry labeling applications as well as complex reporting requirements.

TFORMer Server is usable with any application on any operating system within an enterprise. A tool for remote monitoring is part of the package.

TFORMer Server receives raw document data without any formatting information from host-applications like SAP® R/3®, ORACLE® or legacy applications. No device or layout specific information is required in these data-streams. Throughput is increased while the network load is reduced.

Barcodes

The integrated barcode generator supports all barcode types in common use. In addition to linear barcodes *TFORMer Server* supports complex 2D symbologies like PDF417, MicroPDF, Data Matrix, QR-Code, Aztec Code, MaxiCode, GS1 DataBar composite codes and reduced space symbologies (RSS). The barcode printing feature does not depend on specific barcode printers; even PDF documents created with *TFORMer* take advantage of embedded high-quality barcodes.

Reusability

Document layouts are completely independent from the underlying data, the host-application and from the output device. Once a document was designed, it may be used as often as you want. The actual output format (e.g. printing compared to PDF output) or the output device can be changed without modifying the document template.

- Templates
 - Labels
 - Forms
 - Reports
- Barcodes

Independence

TFORMer Server works with all printers available under Microsoft® Windows®. Dependencies from specific output solutions or printer-manufacturers are eliminated.

Reliability

TFORMer Server was designed with industrial applications in mind. It offers outstanding stability and availability. On demand multiple instances of *TFORMer Server* may be used in parallel. Backup instances of *TFORMer Server* can be activated within minutes manually.

Automated Output

TFORMer prints documents automatically with data of arbitrary host systems. The resulting output is delivered in a timely manner to the specified target devices.

Centralized

TFORMer represents a central output solution for arbitrary host-systems or applications. Industry requirements with respect to scalability and availability are met.

International Applications

TFORMer Server supports Unicode. Documents can be designed with arbitrary fonts and typesets (e.g. Asian or Eastern European languages). The same is true for the data to be printed – your application can choose the required typeset freely.

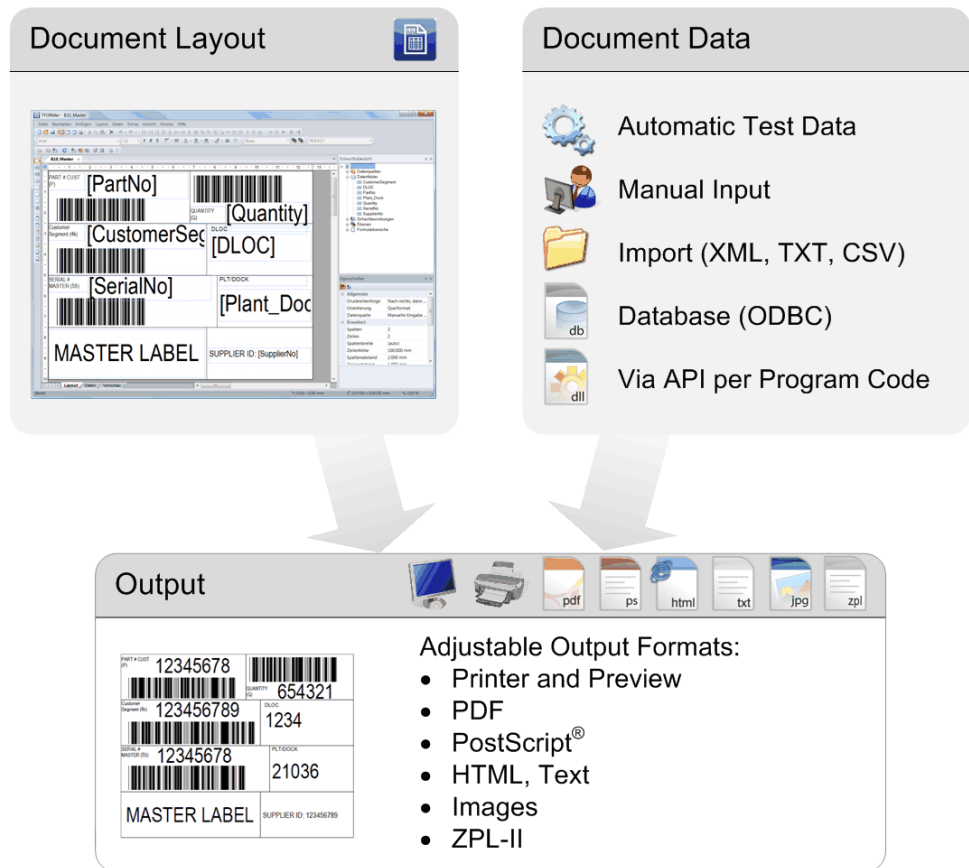
- Smart Document Layouts
- Barcode Labels
 - Forms
 - Reports
 - Lists
- Serial Letters

Principle

A document layout created with *TFORMer Designer* contains static content and dynamic document data. Dynamic document data is provided manually by the user or by external data sources like databases or host applications.

TFORMer uses the document layout along with the data provided to generate perfect output. Output is either printed directly or generated in a supported export format like PDF, PostScript® or ZPL-II.

Generating output is completely encapsulated within *TFORMer*. The output logic (e.g. switching trays or selecting output formats, computations ...) is defined within the document layouts.



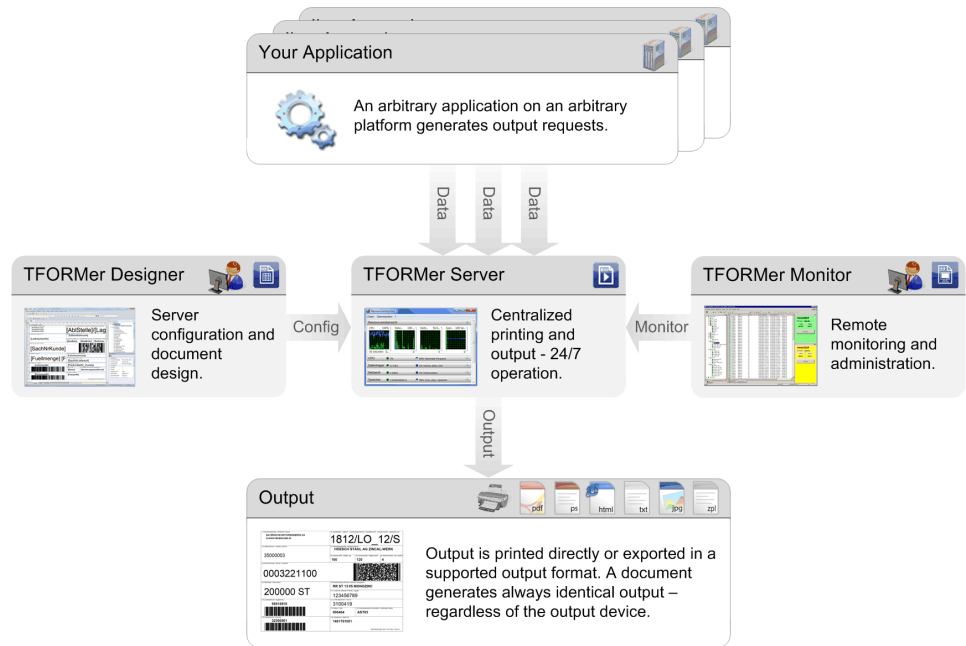
- All Printers
- PostScript®
 - PDF
 - ZPL-II
 - HTML
 - Images
- High Availability
 - Redundancy

All features of *TFORMer* are completely integrated into the software. Additional 3rd party software (like a PDF printer or a barcode generator) is not required.

TFORMer separates data from document design. Document layouts can be reused as often as required, they are completely independent from the used data source, printer or output format.

Workflow

This chapter outlines the typical steps when using *TFORMer Server*:



TFORMer Designer

Document Design

TFORMer Designer is used for creating or adapting document layouts. All layouts can be printed directly from within *TFORMer Designer* for testing purposes. *TFORMer Designer* offers print preview with life data, unlimited redo/undo and an easy to use graphical user interface.

TFORMer Server Configuration

TFORMer Designer is also used for adjusting the configuration of *TFORMer Server* (e.g. target devices and host connections). This is done exclusively via the graphical user interface – no manual modification of cryptic configuration files is required.

All configuration data and the document layouts are stored in a so-called „Repository“. Such a repository is a collection of XML files and is used by *TFORMer Server* as a single place for all configuration data.

Workflow

- Create Documents
- Configure Server
 - Provide Data
 - Print

TFORMer Server

System Service

TFORMer Server operates as a system service in the background. This service performs document creation, printing and document distribution automatically. When *TFORMer Server* is starting, the configuration (the repository) is loaded and the connections to host applications as well as the output devices are initialized.

Providing Document Data

TFORMer Server receives output requests from host applications (which is an arbitrary application running on an arbitrary platform) via so called "connectors". Usually the data for output requests is passed to *TFORMer Server* without any control or device-specific format information. Communication with host applications is parallelized. Multiple host applications can send output requests to *TFORMer Server* simultaneously.

TFORMer Server analyzes output requests received via these connectors and stores them in per-device output queues. *TFORMer Server* maintains the job-order and the size of the queues automatically.

ASCII or XML data streams may be used by host applications for submitting output requests. Furthermore *TFORMer Server* is able to retrieve document data from arbitrary SQL databases via ODBC connectivity.

Additional connectors for SAP® IDOC, SAP® RFC and SAP® JCO are implemented on request.

Printing and Output

When printing, the specified document layout is completed with the data as received from the host application and the resulting document is sent to the target device. Document creation is done in parallel – multiple output devices are served simultaneously.

All output requests are stored in a completely device independent way. Device-specific output information is only created before it is sent to the output device. Thus output requests may be moved between different output devices at any time.

TFORMer Server stores an adjustable number of output requests per target device. An output request can be paused or restarted via the remote monitoring tool *TFORMer Monitor*.

- Automated printing and Output
- All Host Applications
- All Printers
- All Output Formats



TFORMer Server

TFORMer Monitor**Server Operation**

TFORMer Monitor is used for monitoring and controlling all instances of *TFORMer Server*. *TFORMer Monitor* notifies the user about current output requests and error conditions (e.g. printer offline). Moreover, redirecting or resubmitting output requests can be done from arbitrary workstations within your network. A direct access to the host applications submitting the output requests is not required.

A special highlight of *TFORMer Monitor* must be emphasized: Output requests are identified with data or criteria contained in the output requests themselves. Instead of an anonymous document name the user is able to identify a print-job by customer number, serial number, etc.

TFORMer Monitor is installed on arbitrary Microsoft® Windows® clients within the network. Multiple *TFORMer Server* instances may be monitored simultaneously – even from different clients.

- Remote Administration



Host Connectivity

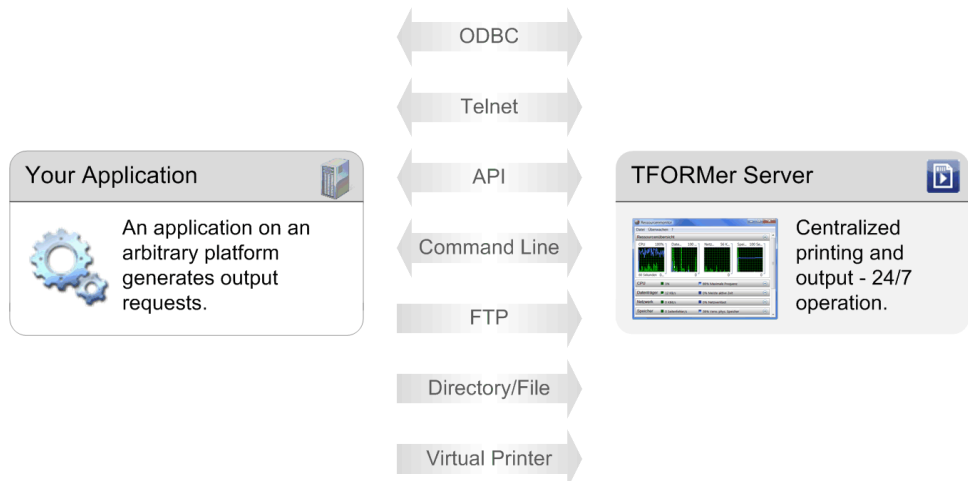
Overview

A connector is a communication channel between a host application and *TFORMer Server*. Connectors are used to pass document data for generating output to *TFORMer Server*.

Connectors are monitored by *TFORMer Server* automatically. Whenever data is received by a connector, *TFORMer Server* analyzes the data stream and thereafter generates the required output in the desired format.

Output channel and output format (e.g. the required printer) can be specified per output request. In each case the host application sends only raw data without any control or formatting information.

An arbitrary number of connectors can be operated in parallel:



- All Platforms
- All Applications

Connectors

Virtual Printer

A virtual printer is a logical printer queue which is shared by the *TFORMer Server* machine.

This virtual printer is accessible by all common operating systems and host applications (e.g. by using the UNIX printing services LPR/LPD).

Each print job printed into this printer is intercepted by *TFORMer Server* automatically: The data stream is analyzed and *TFORMer Server* generates or prints output based on the selected document layout along with the document data extracted from the data stream.

TELNET – TCP/IP

This connector enables you to pass output requests to *TFORMer Server* using the TELNET protocol (e.g. from a JAVA application). A few TELNET commands are used to instruct *TFORMer Server* which document should be printed. Document data and output format can be specified easily.

Only raw document data without format or device specific information is transferred to *TFORMer Server*.

Database – ODBC

With the help of the ODBC connector *TFORMer Server* connects to arbitrary databases and retrieves output requests and document data on its own.

The SQL statements to be used for retrieving output requests and for confirmation purposes (e.g. marking an output request as printed) are freely adjustable. The polling interval is also customizable.

FTP

Output requests are stored as XML or ASCII files on FTP servers. *TFORMer Server* operates as FTP client which queries these FTP servers in customizable intervals for such output requests. Successfully printed output requests are deleted automatically from the FTP server, the output order is determined by the lexicographic order of the filenames on the server.

Directory

Output requests are stored as XML or ASCII files on network shares or in local folders.

This connector is comparable to the FTP connector described above. Instead of monitoring FTP-Servers, *TFORMer Server* automatically queries the specified folders for output requests. Successfully printed output requests are deleted automatically by *TFORMer Server*.

- Virtual Printer
 - TELNET
 - ODBC
 - FTP
- Directory
- Command-Line

- API
- Batch-Interface
- ASCII Streams

API (Application Programming Interface)

The API connector is the ideal connector if *TFORMer Server* should be embedded in own applications. A slim API (application programming interface) enables the developer to pass output requests to *TFORMer Server* via program code.

Command Line (Batch-Interface)

A small command-line utility passes output requests to *TFORMer Server*. This utility is based on the API connector and can be used on the same machine where *TFORMer Server* is installed (e.g. as part of batch jobs).

SAP® R/3®

Connectors which are compatible with SAP® R/3® are implemented on request.

File Formats

As a rule of thumb host applications pass only raw document data to *TFORMer Server*. You benefit from reduced network load, higher throughput and complete independence from output formats or output devices.

The generation of device-specific output only takes place when actually printing a document.

Document data can be passed to *TFORMer Server* as XML data stream (see below) or in a proprietary ASCII format:

Passing Document Data with ASCII Files

```
DefineScript;
Printer OutputChanel;
BeginForm ProjectName, DocumentName;
DataField1 = "Value1";
DataField2 = "Value2";
EndForm;
```

Example: The output device named „QPR01“ (this may be a printer) should print a production label named „Quality“ / „QCheck“ including a serial number (data field **SNR**) and timestamp (data field **DAT**).

In order to instruct *TFORMer Server* to print this label just pass the following output request to any activated connector:

```
DefineScript;
Printer QPR01;
BeginForm Quality, QCheck;
SNR = „34511819“;
DAT = „29.07.2009“;
EndForm;
```

Passing Document Data with XML Files

The same result can be achieved by using a XML structure:

```
<TFSData>
  <Job>
    <Output>
      <OutputChannel Name="QPR01" />
      <Form Project="Quality" Name="QCheck"/>
      <Records>
        <Record>
          <V Name="SNR">34511819</V>
          <V Name="DAT">29.07.2009</V>
        </Record>
      </Records>
    </Output>
  </Job>
</TFSData>
```

TEC-IT recommends using XML whenever possible. The structure of the XML may be pre-processed with XSLT transformations (this is another of the features built into *TFORMer Server*) and the user can specify arbitrary encodings. This makes the use of non-ANSI (Unicode) characters easy!

Passing Document Data with Custom Formats

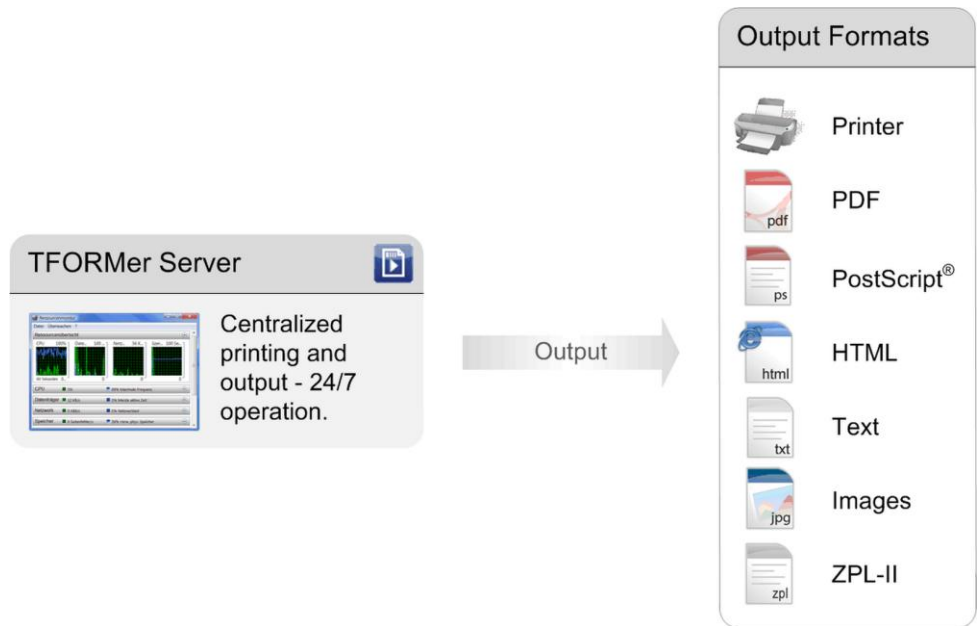
TEC-IT implements custom connectors or file formats on request. Just let us know your requirements.

- XML Files
- XML Streams
- Unicode

Printing and Output Creation

Output Formats

A document created with *TFORMer Designer* can be printed or exported with *TFORMer Server* without any modifications. The following output formats are supported by *TFORMer Server*:



Direct Printing

Printing with all printers available on Microsoft® Windows®.

PDF

High-throughput PDF creation is integrated into *TFORMer Server*.

PostScript®

TFORMer Server generates PostScript® Level 2 on request directly. Special drivers are not required.

HTML

TFORMer Server creates pure HTML using CSS and embedded images. The created output is restricted by standard HTML capabilities (e.g. rotated text is not possible).

Text/ASCII

The generated ASCII output is used for mobile SMS applications and for controlling special purpose printers.

Images

Output can be created directly as GIF, TIFF, PNG, JPG, TGA, BMP and PCX.

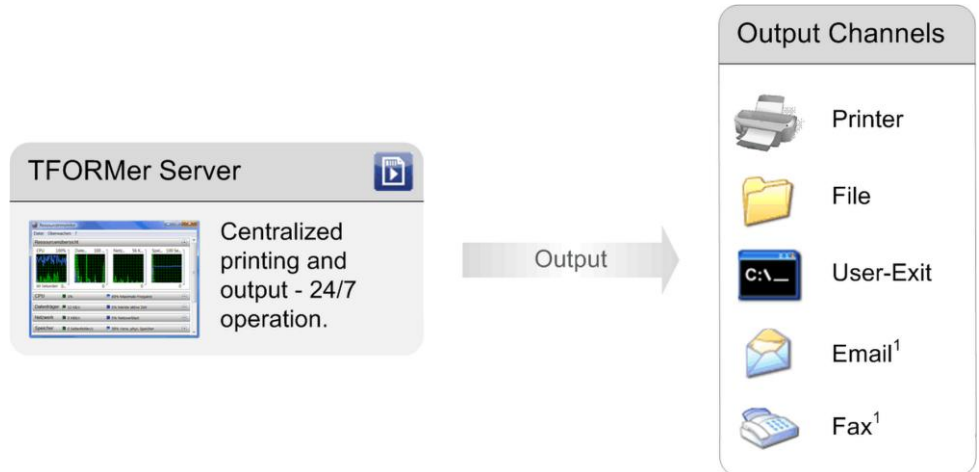
ZPL-II

ZPL-II code for ZEBRA® printers is supported directly. ZPL-II drivers are not required.

- Any Output Format
 - Printer
 - PDF
- PostScript®
 - HTML
 - ASCII
- Images
- ZPL-II

Printers and Output Channels

Output generated by *TFORMer Server* is either printed directly or exported in a supported output format: For automated post-processing of exported output files so-called "user-exits" are available:



Microsoft® Windows Printer

All printers available under Microsoft® Windows® can be used with *TFORMer Server*. Due to the barcode support to *TFORMer Server* unmatched bar code printing capabilities are available on each device.

PostScript® Devices

Printers compatible with PostScript® Level 2 are usable without any additional software like device drivers. *TFORMer Server* generates PostScript directly. You benefit from reduced network load and complete barcode support.

File Output

Instead of printing output directly to a printer *TFORMer Server* is able to store the generated output in arbitrary target devices. User-exits are available for further post-processing (e.g. for sending PDF documents via email).

User-Exits

TFORMer Server offers the possibility to invoke external applications before (or after) processing an output request. With this functionality it is possible to use external applications for archiving purposes, for email or FAX sending, or for any other custom requirement.

FAX and Email¹

Direct FAX and email dispatch is realized in one of the next versions.

- Arbitrary Output Channels
 - Printer
 - File
 - User-Exit
 - PostScript®

¹ The email and fax output is in the current version only achievable via user exits.

Operational Advantages

TFORMer Server is used mainly for printing and output in industrial applications. Thus, the solution is focusing on stability and availability:

Reliability

On request *TFORMer Server* checks the output devices permanently for their correct functionality. If a printer is offline, the user is notified visually in *TFORMer Monitor* or via email.

Change Management

Document changes (e.g. layout modifications) are activated and printed immediately. A new configuration of *TFORMer Server* (e.g. adding a new printer) is put into operation by activating the new repository. This is possible during the operation of *TFORMer Server*.

Stability

Multiple instances of *TFORMer Server* can be operated in parallel. The following modes are available:

Active/Active

Two or more *TFORMer Server* instances are using an identical configuration (same repository). In this mode all instances are using identical output devices. The host application selects the server to be used for generating output.

Active/Passive

Two or more *TFORMer Server* instances are using an identical configuration. Only active servers generate output, passive *TFORMer Server* instances receive output requests but do not print them. Only after manual activation of a passive server, this server generates output.

Mixed

Two or more *TFORMer Server* instances are using an identical configuration. Only a specific class of output channels or printers is active a specific server instance.

Watchdog

Each instance of *TFORMer Server* is secured by a so-called watchdog process. This watchdog ensures continuous availability of *TFORMer Server* even in worst-case scenarios.

- Stability
- Reliability
- Redundancy
- Remote Monitoring

Data Sheet

TFORMer Server

- General Data
 - Connectors
 - Output
 - Availability
- TFORMer Monitor

General	
Operating systems	Microsoft® Windows® XP SP1 or higher.
Reliability	Multiple instances, active/passive operation
Visual configuration	✓
Number of output channels/printers	Theoretically unlimited, in praxis up to 50 per CPU. Load-dependent!
Number of host-applications	Theoretically unlimited, in praxis up to 25 per instance. Load-dependent!
Throughput	Up to 25 documents/sec.

Connectors	
Virtual printer	✓
File (ASCII, XML)	✓
FTP	✓
Database (ODBC)	✓
Telnet	✓
Command line	✓
API	✓

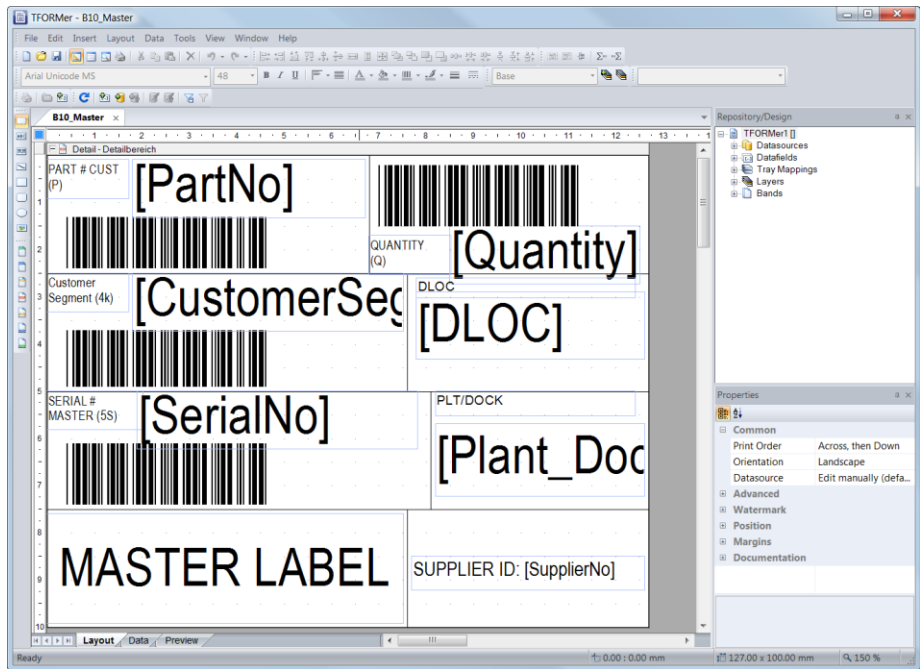
Output Formats	
Printer	All printers available on Microsoft® Windows®
PostScript®	✓
PDF	✓
Images	GIF, JPG, PNG, FIG, BMP, PCX, BMG, TIFF, TGA
ZPL-II	✓
HTML	✓
ASCII	✓

System Availability	
Email notifications	✓
Backup operation	✓
Log files	✓
Event viewer support	✓
Unique event-IDs (MOM)	✓

TFORMer Monitor	
Network installation	✓
Start/stop/pause output channels	✓
Start/stop/pause/delete jobs	✓
Output channel redirection	✓
Job redirection	✓
Adjustable GUI	✓
Adjustable font-size (touch-screen)	✓

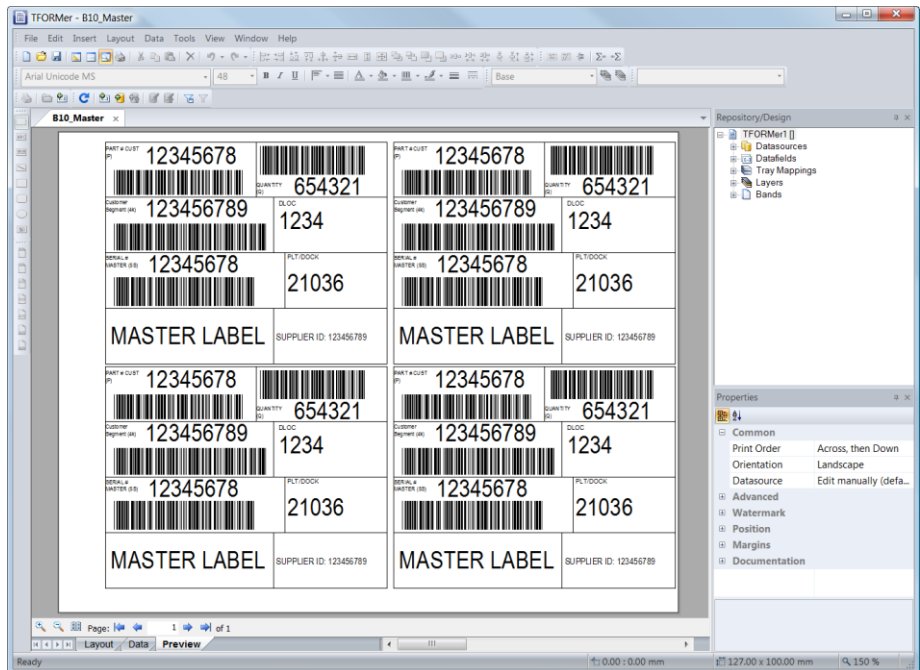
Screen Shots

TFORMer Designer – Document Design and Configuration



TFORMer Designer – Preview with Live Data

- Document Design
- Preview
- Instant Printing



TFORMer Monitoring – Operation

The screenshot shows the SpoolAdmin application window. The main area displays a list of print jobs with columns for ID, Status, ECode, Datum (angelegt), Datum (gedruckt), K1, and K2. The status of all jobs is 'gedruckt' (printed) with an 'Ok' ECode. The status bar at the bottom indicates 'Bereit' (Ready) and '000.000' jobs.

ID	Status	ECode	Datum (angelegt)	Datum (gedruckt)	K1	K2
111	gedruckt	Ok	02.05.2005 09:23:51	13.06.2005 14:26:07	GewNetto: 10310	
120	gedruckt	Ok	02.05.2005 13:51:49	13.06.2005 13:52:41	GewNetto: 10310	
343	gedruckt	Ok	20.06.2005 17:41:28	20.06.2005 17:41:29		
339	gedruckt	Ok	20.06.2005 17:37:23	20.06.2005 17:37:23		
329	gedruckt	Ok	20.06.2005 17:37:17	20.06.2005 17:37:18		
328	gedruckt	Ok	20.06.2005 17:37:17	20.06.2005 17:37:18		
324	gedruckt	Ok	20.06.2005 17:37:17	20.06.2005 17:37:18		
323	gedruckt	Ok	20.06.2005 17:37:17	20.06.2005 17:37:17		
286	gedruckt	Ok	20.06.2005 17:36:59	20.06.2005 17:37:01		
315	gedruckt	Ok	20.06.2005 17:37:11	20.06.2005 17:37:12		
311	gedruckt	Ok	20.06.2005 17:37:11	20.06.2005 17:37:11		
319	gedruckt	Ok	20.06.2005 17:37:16	20.06.2005 17:37:17		
291	gedruckt	Ok	20.06.2005 17:37:00	20.06.2005 17:37:02		
287	gedruckt	Ok	20.06.2005 17:36:59	20.06.2005 17:37:01		
252	gedruckt	Ok	20.06.2005 17:36:42	20.06.2005 17:36:43		
285	gedruckt	Ok	20.06.2005 17:36:59	20.06.2005 17:37:01		
281	gedruckt	Ok	20.06.2005 17:36:59	20.06.2005 17:37:00		
290	gedruckt	Ok	20.06.2005 17:36:58	20.06.2005 17:37:00		
276	gedruckt	Ok	20.06.2005 17:36:58	20.06.2005 17:36:59		
275	gedruckt	Ok	20.06.2005 17:36:58	20.06.2005 17:36:58		
271	gedruckt	Ok	20.06.2005 17:36:58	20.06.2005 17:36:58		
240	gedruckt	Ok	20.06.2005 17:36:36	20.06.2005 17:36:37		
257	gedruckt	Ok	20.06.2005 17:36:42	20.06.2005 17:36:43		
256	gedruckt	Ok	20.06.2005 17:36:42	20.06.2005 17:36:43		
261	gedruckt	Ok	20.06.2005 17:36:43	20.06.2005 17:36:44		
251	gedruckt	Ok	20.06.2005 17:36:42	20.06.2005 17:36:42		
244	gedruckt	Ok	20.06.2005 17:36:37	20.06.2005 17:36:37		
307	gedruckt	Ok	20.06.2005 17:37:10	20.06.2005 17:37:10		
229	gedruckt	Ok	20.06.2005 17:36:21	20.06.2005 17:36:22		
228	gedruckt	Ok	20.06.2005 17:36:21	20.06.2005 17:36:22		
227	gedruckt	Ok	20.06.2005 17:36:21	20.06.2005 17:36:21		
223	gedruckt	Ok	20.06.2005 17:36:20	20.06.2005 17:36:21		
204	gedruckt	Ok	20.06.2005 17:36:15	20.06.2005 17:36:17		
203	gedruckt	Ok	20.06.2005 17:36:15	20.06.2005 17:36:17		
202	gedruckt	Ok	20.06.2005 17:36:15	20.06.2005 17:36:17		
198	gedruckt	Ok	20.06.2005 17:36:14	20.06.2005 17:36:16		
197	gedruckt	Ok	20.06.2005 17:36:14	20.06.2005 17:36:16		
193	gedruckt	Ok	20.06.2005 17:36:14	20.06.2005 17:36:15		

- Server Operation
 - Network Installation



TFORMer Server

- Designer:
per Seat
- Server:
per Printer or
per Site

Licenses

Demo Versions

Free demo versions are available on request. Support for demo version is free too!

TFORMer Designer

TFORMer Designer offers WYSIWYG document layout, full barcode support, data import from files or databases and instant printing.

- One license per workstation
- Volume discounts

Current prices are available on <http://www.tec-it.com/order/>.

TFORMer Server

TFORMer Server is licensed for a specific number of printers (output channels), per site (with an unlimited number of printers) or per number of instances.

Please contact us for a quote!



Contact

TEC-IT Datenverarbeitung GmbH

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Fax:	++43 (0)7252 / 72 72 0 – 77
Email:	office@tec-it.com
Web:	http://www.tec-it.com

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