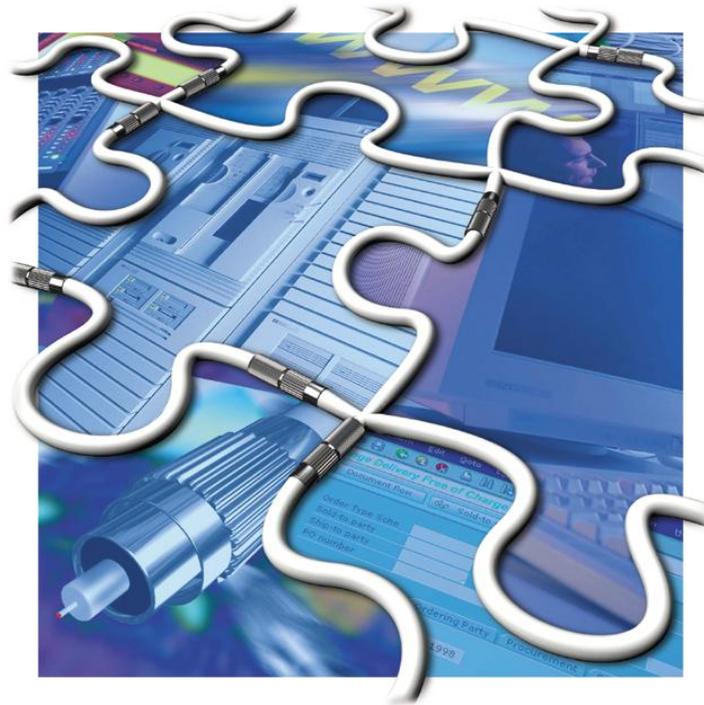


TCP/IP Ports Used by SAP Applications



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1 Introduction

This paper provides a comprehensive list of ports used by SAP software. It can be useful for planning and configuring your network infrastructure according to SAP requirements. It can also be used to identify specific SAP network traffic for monitoring, prioritization or security purposes.

1.1 Status and Version History

This paper is subject to continuous upgrade. Please check at SAP Developer Network (SDN) for the most recent version.

1.2 Who Should Read This Document

Use this paper for planning, monitoring and troubleshooting the networking infrastructure for your SAP systems. It is written for anyone dealing with networking aspects of SAP systems. This includes:

- System architects and administrators
- Network planners and operators
- Network providers
- System integration consultants

1.3 Resolving Port Conflicts

For a list of reserved (internet) ports, see <http://www.iana.org/assignments/port-numbers>. You should not use one of these services on the same host of your SAP system, if there are port conflicts with your specific SAP system installation.

Note: Host network ports, which are required by a SAP system installation must not be used by any other services or programs on the same host. Otherwise the system will not operate correctly or installation will fail.

In case SAP system ports of a chosen SAP Instance Number (e.g. 00) are already in use, please choose a different instance number or if arbitrary a different port during installation (see also [Note 1169](#)).

Info: Many SAP TCP/IP port assignments exist since 1992. In a day when the list of well known ports ended with 1023. Later released SAP products will typically use a port range from 50000 and above during installation. Even so you may have to avoid port conflicts in this port range with other vendor programs if they run on the same host.

1.4 Client Ports

This document contains no client ports. Client ports are allocated automatically by the operating system. No SAP software specifies a certain port for the client side of a connection.

1.5 Source and Feedback

You can find this document and related ones on technical infrastructure topics in the SAP Developer Network SDN ([TCP/IP Ports used by SAP](#)) at. If you do not have access to that Web site send email to security@sap.com. Please use this address also for any kind of feedback regarding this document.

2 Port Table

The following table list SAP applications and functions listening on a port for incoming network requests. A description of the fields can be found in chapter 3.

2.1 SAP Applications

Service	Port Number / Service Name Rule	External	Default	Range (min-max)	Fixed	Comment
NetWeaver Application Server ABAP including Internet Connection Manager (ICM)						
Dispatcher	32NN sapdpNN	+	3200	3200-3299 sapdp00-sapdp99	+	SAP Dispatcher, used by SAP GUI for Windows and Java
Gateway	33NN sapgwNN	+	3300	3300-3399 sapgw00-sapgw99	+	SAP gateway, used for CPIC and RFC communication
Gateway	48NN sapgwNNs	+	4800	4800-4899 sapgw00s-sapgw99s	+	SNC secured SAP gateway, used for CPIC and RFC communication, see SNC Users Guide for details, only encrypted communications. Please note, there is no related sapdpNNs (47xx) port
ICM HTTP	80NN	+	8000	Free		You can configure the system to use port number 80 after installation.
ICM HTTPS	443NN	+	Not active	Free		The port is not configured during installation. If you want to use HTTPS, you must configure it manually.
ICM SMTP	25	+	Not active	Free		The port is not configured during installation. If you want to use SMTP, you must configure it manually. Only one instance per host should offer SMTP service.
Message Server	36NN sapmsSID	+	3600 sapmsC11	Free sapms<any SID>		Only CI (central instance) Service names can be reassigned in /etc/services to an arbitrary value after installation. Relevant only for releases prior to SAP NetWeaver 7.0
Message Server HTTP	81NN	+	8100	Free		Only CI (central instance) Can be used to retrieve system information via HTTP Relevant only for releases prior to SAP NetWeaver 7.0
Message Server HTTPS	444NN	+	Not active	Free		Only CI (central instance) The port is not configured during installation. Relevant only for releases prior to SAP NetWeaver 7.0
Central System Log	UDP: 12NN, 13NN, 14NN, 15NN	+	Not active	Free		Syslog (rslgsend) uses UDP for communications, see Note 25526 for details
Purely internal ports						
Dispatcher	32NN/UDP		3200/UDP	3200-3299/UDP		Only used on local host for signaling dispatcher, never seen on the network, disabled by default starting with 7.0 (gw/use_udp=1 will enable UDP port)
Gateway	33NN/UDP		3300/UDP	3300-3399/UDP	+	
ICM Admin	detected automatically		65000 or next free lower port	65000 or less		Internal communication. Automatically uses the first free port from 65000 downwards. Port accepts connections only from localhost.

Service	Port Number / Service Name Rule	External	Default	Range (min-max)	Fixed	Comment
SAP NetWeaver Application Server Java						
JAVA EE Dispatcher (replaced by ICM in release SAP NetWeaver 7.1)						
HTTP	5NN00	+	50000	50000-59900		NN = Instance number (00...99)
HTTP over SSL	5NN01	+	50001	50001-59901		
IIOp initial context	5NN02	+	50002	50002-59902		
IIOp over SSL	5NN03	+	50003	50003-59903		
P4	5NN04	+	50004	50004-59904		
P4 over HTTP tunneling	5NN05	+	50005	50005-59905		Relevant only for releases up to and including SAP NetWeaver 7.0
P4 over SSL	5NN06	+	50006	50006-59906		
IIOp	5NN07	+	50007	50007-59907		
Telnet	5NN08	+	50008	50008-59908		
JMS	5NN10	+	50010	50010-59910		Relevant only for releases up to and including SAP NetWeaver 7.0
JAVA EE Server (internal ports)						
Server Join Port	5NN20 + x*5		50020 (server 0)	50020-59995	+	X = 0, 1, 2, 3, ...15 (number of server)
Server Debug Port	5NN21 + x*5		50021 (server 0)	50021-59996	+	X = 0, 1, 2, 3, ...15 (number of server)
Central Services for Java (Separate instance, default instance number 01)						
Enqueue Server						
Enqueue Server Port	32NN sapdpNN		3201	3200-3299		Provides locking services for AS Java NN = Instance number (00...99) enque/encni/port
Enq. Replication	33NN sapgwNN		3301	3300-3399		Replication of enqueue data for high availability NN = Instance number (00...99) Releases up to NW2004s enque/encni/repl_port. Relevant for releases up to and including SAP NetWeaver 7.0.
Enq. Replication	5NN16		50116	50016, ..., 59916		Replication of enqueue data for high availability NN = Instance number (00...99) enque/encni/repl_port Starting with NW2007
Gateway						
Gateway	33NN sapgwNN		3301	3300-3399		Only relevant for releases SAP NetWeaver 7.1 and higher. Ports used by SAP gateway for CPIC and RFC communication
Gateway	48NN sapgwNNs	+	4800	4800-4899 sapgw00s- sapgw99s	+	SNC secured SAP gateway, used for CPIC and RFC communication, see SNC Users Guide for details, only encrypted communications. Please note, there is no related sapdpNNs (47xx) port

Service	Port Number / Service Name Rule	External	Default	Range (min-max)	Fixed	Comment
Message Server						
Message Server Port	36NN		3601	3600-3699		NN = Instance number (00...99) rdisp/msserv
HTTP	81NN	+	8101	8100-8199		ms/http_port_<n>
HTTPS	444NN	+	Not active	44400-44499		ms/https_port_<n>
SAP NetWeaver AS Administrative Services						
Host Control Service						
SAPHostControl	1128	(+)	1128	50013-59913	+	SAP Landscape Host integration service
SAPHostControlS	1129	(+)	1129	50013-59913	+	NN = Instance number (00...99)
Start Service						
Start Service	5NN13 sapctrINN	+	50013	50013-59913	+	NN = Instance number (00...99) HTTP
Start Service	5NN14 sapctrlsNN	+	50014	50014-59914	+	NN = Instance number (00...99) HTTPS
Installation & upgrade tools						
SDM as part of AS instance	5NN17 5NN18 5NN19		50017 50018 50019		+	Software deployment manager Only CI (central Instance) NN = Instance number (00...99) Only NW04 and NW2004s
SL Controller	5NN17 5NN18 5NN19		50017 50018 50019		+	Used for patch and upgrade services *17: Administrator Communication *18: GUI port *19: http port NN = Instance number (00...99) NW2007
SAPinst	21212 21213		21212 21213	Free		
SAPinst on IBM AS400 iSeries	59975 59976		59975 59976	Free		SAPinst on IBM iSeries needs these additional ports.
Upgrade - Monitoring - UA-server (HTTP) - R3up-process - UA-server	4238 4239 4240 4241		4238 4239 4240 4241	Free		

Service	Port Number / Service Name Rule	External	Default	Range (min-max)	Fixed	Comment
Utilities						
SAProuter	3299	+	3299	Free		
SAP Web Dispatcher - HTTP port - HTTPS port	chose freely chose freely	+		Free		Currently there is no installation procedure for SAP Web Dispatcher. Typical port for HTTP is 80. Typical port for HTTPS is 443
niping	3298	+	3298	Free		SAP network test program
SAPlpd	515 printer	+	515	Free		SAP printer spooler
RDBMS (Database Systems)						
MS SQL	Chose freely		1433	1024 – 5000	+	Port can be statically or dynamically allocated. If dynamic, port 1434/udp is also required.
Oracle listener	1527		1527	Free		configured in listener.ora and tnsnames.ora
IBM DB6 (AIX) DB2 (OS/400)	50000 4402 / as-edrsq		50000 4402	Free		Conflicts with SAP JAVA EE Engine with instance number 00. See relevant documentation on how to change this DB6 default port.
liveCache (MaxDB) (formerly know as SAP DB) Webtools	7200 / sql30 7210 / sql6 7269/sapdni72 7270/sdbnissl76 7575 / SDB	 + + +	7200 7210 7269 7270 7575	Free		In case of multiple MaxDB instances on one host the services are shared by all instances.
NWDI (NetWeaver Development Infrastructure)						
DTR	5NN15		50015			Design Time Repository (NW2004s and later) NN = Instance number (00...99)

Service	Port Number / Service Name Rule	External	Default	Range (min-max)	Fixed	Comment
SAP NetWeaver AS Administrative Services						
ITS (Internet Transaction Server)						
AGate	39N0-39NM / sapavw00_Inst		3900 – 390M	Free		N determined at setup so that range free M = No agates –1 Inst = Name of ITS Instance
MM	39N9 / sapavwmm_Inst		3909	Free		Mapping Manager
IGS (Internet Graphics Server) as part of Application Server Instance						
Multiplexer	4NN00					
Portwatcher (Clients)	4NN01-4NN79					
HTTP-ports	4NN80-4NN99					
XI (SAP Exchange Infrastructure)						
JMS/JDBC/File Adapter Server	8200 (8201, ... for multiple Adapter Installations on same host)	+	8200 (Rules for this adapter not yet implemented)	Free		Port used for interactive browser access to configuration interface. Adapter does not belong to an SAP Application Server system. It can be installed on a host with XI server, or standalone. Usually only one instance needed, because individual JMS/JDBC and File Adapter instances live inside one serve process.
JMS Adapter	Chose freely		8210	Free		Port for incoming data from XI server.
JDBCAdapter	Chose freely		8220	Free		Port for incoming data from XI server.
File Adapter	Chose freely		8230	Free		Port for incoming data from XI server.
IPC (NW05 and CRM 5.0) (Internet Pricing and Configurator)						
IPC Dispatcher	4363	+	4363	Free		Mobile client
IPC Version 3.0 and 4.0 (Internet Pricing and Configurator)						
IPC Dispatcher	4444	+	4444	Free		Mobile client
IPC data loader	4445		Not active	Free		
IPC Server	9999, 9998, ...		9999	Free		Counting down from 9999 for each server process.

Service	Port Number / Service Name Rule	External	Default	Range (min-max)	Fixed	Comment
TREX (Text Retrieval and Information Extraction)						
Name Server	3NN01		30001	30001-39901		NN = TREX Instance; available for TREX 6.1, TREX 7.0, TREX 7.1
Pre Processor	3NNx2		30002	30002-39992		multiple servers possible x=server-index (0,1,2,...,9); available for TREX 6.1, TREX 7.0, TREX 7.1
Index Server	3NNx3		30003	30003-39993		multiple servers possible x=server-index (0,1,2,...,9); available for TREX 6.1, TREX 7.0, TREX 7.1
Queue Server	3NNx4		30004	30004-39994		multiple servers possible x=server-index (0,1,2,...,9); available for TREX 6.1, TREX 7.0, TREX 7.1
HTTP Server	3NN05		30005	30005-39905		available for TREX 6.1, TREX 7.0, TREX 7.1
GRMG service (Heartbeat)	3NN06		30006	30006-39906		optional; available as of TREX 7.0
RFC Server	3NN07		30007	30007-39907		Multithreaded RFC server with port 3NN07 available as of TREX 7.0
Cruiser	3NNx8		30008	30008-39908		multiple servers possible x=server-index (0,1,2,...,9); available as of TREX 7.1
Alert Server	3NN11		30011	30011-39911		available as of TREX 7.0
BackupServer	3NN17		30017	30017-39917		optional; available as of TREX 7.1
MDM (Master Data Management)						
Admin Console	20003	+	20003	Fixed	+	Communication between Admin Console application and MDM server
Server to Server	20004		20004	Fixed	+	Inter Server communication (master/slave)
Admin Console	20005	+	20005	Fixed	+	Communication between Admin Console application and MDM server
Import Manager	20006	(+)	20006	Fixed	+	Communication between MDM Import Manager Service and its clients
Syndicator Service	20007	(+)	20007	Fixed	+	Communication between MDM Syndicator Service and its clients
Layout Server	31596, 31597, 31604	+	31596, 31597, 31604	Fixed	+	Communication for print publishing between MDM Layout Server and its clients
Layout Server Quark Express	31602	+	31602	Fixed	+	Communication for print publishing between MDM Layout Server and Quark Express plugin
Layout Server Adobe InDesign	31603	+	31603	Fixed	+	Communication for print publishing between MDM Layout Server and Adobe InDesign plugin
Layout Server	31596	+	31596	Fixed	+	Communication for print publishing between MDM Layout Server and its clients
MDM Server	2000-2002	+	2000-2002	2000-9997		3 consecutive ports in this range are required per each repository

Service	Port Number / Service Name Rule	External	Default	Range (min-max)	Fixed	Comment
TREX 6.0 (Text Retrieval and Information Extraction)						
Name Server	8355		8355	Free		
Pre Processor	8357		8357	Free		
Index Server	8351		8351	Free		
Queue Server	8352		8352	Free		
Http Server	8353		8353	Free		
Monitoring (GRMG)	8366		8366	Free		Availability monitoring in CCMS
Content Server						
Content Server	1090	+	1090	Free		
Cache Server	1095	+	1095	Free		
CRM						
CSDM	20201	+		Free		Central Software deployment manager
Exchange Groupware Connector (DCOM)	135 / DCE					DCOM uses port 135 for the Service Control Manager which allocates a free port for the application.
Lotus Domino - Connector - Proxy	62026 – 62029 62126 - 62129	+	62026–62029 62126-62129	Free Free		The range comprises 4 Instances xxx26 for instance 1 up to xxx29 for instance 4.
PAW (Performance Assessment Workbench of Knowledge Warehouse)						
PAW Communication Server	1099	+	1099	Free		Java RMI Server
PAW Servlet Engine	1089	+	1089	Free		
Business One						
http	Free	+	80	Free		IIS, configurable port on client side
ODBC (e.g. MSSQL)	Free		1433	Free		Port can be statically or dynamically allocated. If dynamic, port 1434/udp is also required.
DCOM	135 / DCE					Connection to license server. DCOM uses port 135 for the Service Control Manager which allocates a free port for the application.

2.2 “Will Not be Used” Ports

The following ports will not be used by standard SAP applications. They are intended for use with partner or other applications co-running on the same computers as SAP applications. To avoid any possible port number conflicts these additional applications are requested to make use of these “will not be used” ports.

Service	Port Number / Service Name Rule	External	Default	Range (min-max)	Fixed	Comment
<i>Will Not be Used by SAP</i>						
				63000 - 65535	+	These ports will not be used by standard SAP applications

3 Table Explanation

Service

The name or identifier of the network services provided by SAP programs.

Port Number / Service Name

For each service, we list the port number associated with this service and if existent the rule used to compute port number and service name. Some ports have corresponding entries in `/etc/services`. If this is the case, we also list the service name.

Some services use fixed port numbers, however most use a number that depends on some other value to allow multiple instances of the program running on the same host.

Variable name convention (see below for explanation):

- ❑ NN is the instance number of the SAP Application Server instance (e.g. 32NN /sapdpNN means 3200 / sadp00 for instance no. 00)
- ❑ SID is the three letter system ID (e.g. sapmsSID means sapmsC11 for SAP system C11)

All ports are TCP ports except where UDP is indicated. UDP is used only for internal communication ON THE SAME HOST, never for communication across a network.

Most port numbers are configured by the installation procedure. In this case, the port number listed in the table is the one used by the installation procedure. Sometimes the installation procedure allows changing the port number. In this case, the value is the one presented as a default by the installation procedure.

Other ports are not configured by the installation procedure. This is because the corresponding service can be used only after other manual configuration steps that cannot be carried out by the installation procedure. If a port is not automatically configured, this is indicated in the comment. If you want to use the corresponding service, you have to set the port manually.

External

The most relevant ports are the ones used by programs that connect to the system, for example, SAP GUI or Web browser or other programs that communicate with the system. Those ports are labeled "external" – there are relatively few of them. The other ports are used for internal communication between components of the system.

Default

The default port numbers are used all defaults presented by the installation procedure are accepted.

Range

The port range indicates the minimum and maximum port number for this service. Not all numbers in this range may be valid ports for this service.

Fixed

The column labeled "fix" indicates that SAP does not support changing this port number. If a conflict occurs, chose a different instance number to avoid occupied ports.

Comments

If appropriate, a brief explanation on the service, the port numbers used or the installation and configuration options.

4 Details on Selected Servers

4.1 SAP Application Server

What are a System, an Instance and all that?

An SAP Application Server system consists of one or more instances. An instance is a "server" in the sense that a user can connect to every instance individually. An instance typically consists of many running operating system processes that are connected by shared memory, TCP/IP connections on the local host and other means. All instances belonging to the same system are connected to the same RDBMS. A system has a three-letter name, the system identifier (SID).

Instances of a system do not have to be configured identically; instead, different instances may offer different services. Some services are unique in a system, i.e. only one instance is configured to offer these services (e.g. Enqueue, Message Server). A system may have an instance called "central instance", which offers many of these unique services.

Every instance has a number between 00 and 99, the so-called instance number (abbreviated by InstNr or NN to indicate the numerical value). The installation default is 00. If more than one instance is installed on the same host, they MUST have different InstNr. InstNrs are usually part of the Port numbers to ensure that there is no conflict between instances.

An instance uses a number of TCP and UDP ports for internal communication. These ports are usually not configurable and not relevant for the "outside world". They are interesting only in the rare case when a conflict with other software on the same host occurs.

The InstNr for an instance can be chosen freely. Different instances belonging to the same system can have different InstNrs. The InstNr is chosen during the installation. Most port numbers depend directly on the InstNr as shown by the table below. Some of the port numbers are merely suggested values that can be overridden during the installation procedure, some are generated automatically but can be changed using configuration tools after the installation as completed and some are fixed in the sense that SAP does not support changing these ports in any way.

SAP Application Server Kernel

The 80NN, 443NN port convention for HTTP(S) ports of the ICM does not comply with the spirit of the HTTP standard, which specifies port 80 for HTTP. We have chosen this convention to make sure that SAP Application Server is able to start up correctly after installation. For productive servers, especially in the Internet, you should change these values. In the future, the installation procedure will already have an option to change these ports.

The port scheme for JAVA EE server processes implies a maximum of 7 server processes per instance. If this should not be sufficient, the port scheme can easily be modified to allow more server processes.

Java EE Engine

HTTP communication is handled by ICM, which forwards requests to JAVA EE engine. Therefore, the HTTP port is used only for internal communication, and the HTTPS port is not used at all.

JAVA EE server handles other protocols, e.g. RMI, directly.

Standalone Java EE Engine

The SAP Java EE engine can also be installed standalone without the Kernel part of the SAP Application Server. This implies that JAVA EE Engine now handles HTTP and HTTPS requests directly.