SMF Type 108 - Domino Server Statistics

This record type presents data for a Lotus Notes Domino Server running on an OS/390 system. The specific type of data that is being reported is defined by the subtype field on the record (SMF108STP) in the standard record header.

Revisions.

Release 5.01 added fields to the subtype 1 data. A transaction type table has been added.

Release 5.02 added fields to the Product Section. Subtype 3 tables have been added.

] Release 5.03 added fields for subtype 2 and subtype 6. These additions are marked
] below with the "]" character in the left margin.

! Corrections to the 5.03 documentation. The HTTP read write valued were cumulative not
! per interval in the subtype 1 records and 4 bytes of pad are being reported after the user
! name in the subtype 2 records. These additions are marked below with the "!" character
! in the left margin.

Type 108 Subtypes:

1 Server Load ..... reports on global activity by the server

] **2** User Activity ..... reports activity per user.

3 Monitoring and Tuning ..... contains some statistics and certain configuration parameters used for tuning Domino

] **6** Data Base Activity ..... reports activity on Domino data bases.

Subtype Descriptions:

Subtype 1 - Server Load

This subtype contains counts of activity done by the server running on the OS/390 system.

] Subtype 2 - User Activity

] This subtype will report Domino User activity for the different protocols Domino sup-
] ports.

Subtype 3 - Monitoring and Tuning

This subtype will monitor some statistics and certain configuration parameters used by the server.

Subtype 6 - Data Base Activity

This subtype will report Domino specific data for domino data bases.

Record Environment

SMF Type 108 records are generated using the C language function 'smf_record' which is a part of the OS/390 extensions to the language. Records are generated at the expiration of the SMF Global Interval (combination of INTVAL an SYNCVAL parameters in the SMFPRMxx parmlib member). The generated invocation results in an environment which equates to

Macro SMFTWM (SVC level interface) -- record exit = IEFU83

Mode Task

Storage Residency 31-bit

SUBSYS 'STC'

Security Notice

Because the processing which generates these records is using the 'C' language interface there is some security setup that must be done in order to enable these records to be generated. The RACF commands (or their equivalent) must be issued before these records can be generated:

- RDEFINE FACILITY BPX.SMF UACC(NONE) -- may have already been done
- PERMIT BPX.SMF CLASS(FACILITY) ID(<server>) ACCESS(READ) --- allow access
- SETROPTS RACLIST(FACILITY) REFRESH --- refresh in-core tables

Record Mappings

The record mappings are shown as two sections, a Common Section which appears on all subtypes and a Unique Section for each subtype.

Common Sections

The following sections appear on each of the Type 108 subtype records and are included in the documentation once.

Header Section

This section contains the common SMF record headers fields and the triplet fields (offset/length/number) that locate the other sections on the record.

Offsets		Name	Length	Format	Description
0	0	SMF108LEN	2	binary	Record length. This field and the next field (total of four bytes) form the RDW (record descriptor word).
2	2	SMF108SEG	2	binary	Segment descriptor (see record length field).

Offsets		Name	Length	Format	Description
4	4	SMF108FLG	1	binary	System indicator: **Bit Meaning When Set** 0 Reserved 1 Subtypes used 2 Reserved 3-6 Version indicators* 7 Reserved.
5	5	SMF108RTY	1	binary	Record type 108 (X'6C').
6	6	SMF108TME	4	binary	Time since midnight, in hundredths of a second, that the record was moved into the SMF buffer.
10	A	SMF108DTE	4	packed	Date when the record was moved into the SMF buffer, in the form 0*cyydddF*.
14	E	SMF108SID	4	EBCDIC	System identification (from the SID parameter).
18	12	SMF108SSI	4	EBCDIC	Subsystem identification.
22	16	SMF108STP	2	binary	Record Subtype **SubType Description** 1 Server Load 2 User Activity 3 Monitoring and Tuning 6 Data Base Activity
24	18	SMF108PRO	4	binary	Offset to Product Section
28	1C	SMF108PRL	2	binary	Length of Product Section
30	1E	SMF108PRN	2	binary	Number of Product Sections (should be '1')
32	20	SMF108SSO	4	binary	Offset to Self-Defining Section
36	28	SMF108SSL	2	binary	Length of Self-Defining Section
38	2A	SMF108SSN	2	binary	Number of Self-Defining Sections (should be '1')

Product Section

This section contains the general information about the server and the system that it is running on.

Offsets		Name	Length	Format	Description
0	0	SMF108PRRVN	4	binary	Record Version Number (starting with '1' for release 5.0a) (Set to 2 for release 5.01) (Set to 3 for release 5.02). (Set to 4 for release 5.03).
4	4	SMF108PRPVN	8	EBCDIC	Product Version ('5.0' for example). This is the first eight bytes of the Product Version string and may contain text or other characters after the number.
12	C	SMF108PRSVN	32	EBCDIC	Server Name (used to identify partitioned servers)
44	2C	SMF108PRSPN	8	EBCDIC	Sysplex Name (ECVTSPLX field in cvt/ecvt)
52	34	SMF108PRSYN	8	EBCDIC	System Name (CVTSYSN field in cvt/ecvt)
60	3C	SMF108PROSL	8	EBCDIC	OS/390 System Level (CVTPRODN field in cvt/ecvt)
68	44	SMF108PRISTARTT	8	binary STCK format	Interval Start Time
76	4C	SMF108PRIENDT	8	binary STCK format	Interval End Time
84	54	SMF108CVTTV	4	binary	CVTTV GMT offset time.

Subtype 1 - Server Load

Self-Defining Section

This section contains the triplet fields (offset/length/number) that locate the specific sections for this subtype on the record.

Offsets		Name	Length	Format	Description
0	0	SMF108SLO	4	binary	Offset to Server Load Section
4	4	SMF108SLL	2	binary	Length of Server Load Section
6	6	SMF108SLN	2	binary	Number of Server Load Sections (should be '1')
8	8	SMF108TRO	4	binary	Offset to Transaction Section
12	C	SMF108TRL	2	binary	Length of Transaction Section
14	E	SMF108TRN	2	binary	Number of Transaction Sections (1 per transaction type processed)
16	10	SMF108PTO	4	binary	Offset to Port Activity Section
20	14	SMF108PTL	2	binary	Length of Port Activity Section
22	16	SMF108PTN	2	binary	Number of Port Activity Sections (1 per TCP/IP port)

Server Load Section

This section contains the counters showing activity at the server level (globally).

Offsets		Name	Length	Format	Description
0	0	SMF108SLCU	4	binary	current number of users
4	4	SMF108SLUA	4	binary	number of currently connected users that are currently active
8	8	SMF108SLUA1M	4	binary	number of currently connected users that have been active within the last 1 minute
12	C	SMF108SLUA3M	4	binary	number of currently connected users that have been active within the last 3 minutes
16	10	SMF108SLUA5M	4	binary	number of currently connected users that have been active within the last 5 minutes
20	14	SMF108SLUA15M	4	binary	number of currently connected users that have been active within the last 15 minutes
24	18	SMF108SLUA30M	4	binary	number of currently connected users that have been active within the last 30 minutes
28	1C	SMF108SLDMSENTL	4	binary	number of Domino mail messages routed.
32	20	SMF108SLDMSENTLAS	4	binary	average size of Domino mail and SMTP messages delivered. bytes/1024.
36	24	SMF108SLDMSENTR	4	binary	number of Domino mail and SMTP messages transferred.
40	28	SMF108SLDMSENTRAS	4	binary	average size of Domino mail messages transferred. bytes/1024.
44	2C	SMF108SLSMREC	4	binary	number of SMTP messages received from other servers during interval
48	30	SMF108SLSMRECAS	4	binary	average size of SMTP messages received from other servers during interval. bytes/1024.
52	34	SMF108SLSMSENT	4	binary	number of SMTP messages sent to other servers during interval
56	38	SMF108SLSMSENTAS	4	binary	average size of SMTP messages sent to other servers during interval. bytes/1024.
60	3C	SMF108SLTRANS	4	binary	total number of transactions processed during interval

Offsets		Name	Length	Format	Description
64	40	SMF108SLSVREPL	4	binary	number of replications initiated by this server
68	44	SMF108SLNWSESIN	4	binary	number of incoming (to the server from clients) sessions established during the interval. (Version 1 format only. For Release 5.01 or higher this field will be set to zero. This data is now recorded in the Port Activity Section).
72	48	SMF108SLNWSESOUT	4	binary	number of outgoing sessions established during the interval. (Version 1 format only. For Release 5.01 or higher this field will be set to zero. This data is now recorded in the Port Activity Section).
76	4C	SMF108SLNWBR	4	binary	number of network Bytes/1024 received during interval. (Version 1 format only. For Release 5.01 or higher this field will be set to zero. This data is now recorded in the Port Activity Section).
80	50	SMF108SLNWBS	4	binary	number of network Bytes/1024 sent during interval. (Version 1 format only. For Release 5.01 or higher this field will be set to zero. This data is now recorded in the Port Activity Section).
84	54	SMF108SLTT	2	binary	total number of physical thread pool threads, server_pool_tasks
86	56	SMF108SLVTIU	2	binary	number of virtual thread pool threads currently in use
88	58	SMF108SLAIOR	4	binary	number of async i/o reads during interval
92	5C	SMF108SLAIOW	4	binary	number of async i/o writes during interval
96	60	SMF108SLPOP3R	4	binary	number of POP3 reads during interval
100	64	SMF108SLIMAPR	4	binary	number of IMAP reads during interval
! 104	68	SMF108SLHTTPR	4	binary	number of HTTP reads since the server was started.
! 108	6C	SMF108SLHTTPW	4	binary	number of HTTP writes since the server was started.
112	70	SMF108SLVTIUMAX	2	binary	maximum number of virtual thread pool threads in use during interval
114	72	SMF108SLTASKS	2	binary	number of tasks currently in use
116	74	SMF108SLTASKSMAX	2	binary	maximum number of tasks in use during interval
118	76	SMF108SLPTIU	2	binary	number of physical thread pool threads currently in use
120	78	SMF108SLPTIUMAX	2	binary	maximum number of physical thread pool threads in use during interval

Transaction Section

This section contains the data being reported for each transaction (by type) that is requested of the server. Only transactions with non-zero activity counts are included.

Offsets		Name	Length	Format	Description
0	0	SMF108TRTYPE	4	binary	transaction type. See Table 1 on page 8 for a description of these types.
4	4	SMF108TRTYPENP	4	binary	number of transactions of type processed during interval
8	8	SMF108TRTYPETA	4	binary	total accumulated response time, in milliseconds, for all transactions of type that completed during interval
12	C	SMF108TRTYPENW	4	binary	total accumulated net wait time, in milliseconds, for all transactions of type that completed during interval. This is the time the server has been waiting for clients to respond.

Port Activity Section

This section contains the data being reported for each TCP/IP port that the server has a connection to.

Offsets		Name	Length	Format	Description
0	0	SMF108PTNAME	8	EBCDIC	The first eight bytes of the TCP/IP port. ('TCPIP' for example)
8	8	SMF108PTNWSESIN	4	binary	number of incoming sessions processed during the interval (client to server connection).
12	C	SMF108PTNWSESOUT	4	binary	number of outgoing sessions processed during the interval
16	10	SMF108PTNWBR	4	binary	total number of bytes/1024 received for this port during the interval.
20	14	SMF108PTNWBS	4	binary	total number of bytes/1024 sent for this port during the interval.

Subtype 2 - User Activity

Self-Defining Section

This section contains the triplet fields (offset/length/number) that locate the specific sections for this subtype on the record.

Offsets		Name	Length	Format	Description
0	0	SMF108UDO	4	binary	Offset to Data Section
4	4	SMF108UDL	2	binary	Length of Data Section
6	6	SMF108UDN	2	binary	Number of Data Sections

User Activity Data Section

This section contains the data for users by IP address and connection type.

Offsets		Name	Length	Format	Description
0	0	SMF108UIPA	16	EBCDIC	IP address presenting the request for service.
16	10	SMF108UTYPE	4	EBCDIC	Type of connection to the Domino Server. **User Type Description** NRPC Notes Data base server to Client. HTTP Notes HTTP server. IMAP IMAP mail server. POP3 POP3 mail server. SMTP SMTP mail server.
20	14	SMF108UNAME	32	EBCDIC	Notes user name for NRPC clients.
52	34		4	unknown	4 bytes of padding.
56	38	SMF108UCPU	8	binary STCK format	CPU time used by this user.
64	40	SMF108UBR	4	binary	number of bytes read this interval.
68	44	SMF108UBW	4	binary	number of bytes written this interval.

Subtype 3 - Monitoring and Tuning

Self-Defining Section

This section contains the triplet fields (offset/length/number) that locate the specific sections for this subtype on the record.

Offsets		Name	Length	Format	Description
0	0	SMF108MTO	4	binary	Offset to Data Section
4	4	SMF108MTL	2	binary	Length of Data Section
6	6	SMF108MTN	2	binary	Number of Data Sections (should be '1')

Monitoring and Tuning Data Section

This section contains some statistics and certain configuration parameters for tuning the Domino server.

Offsets		Name	Length	Format	Description
0	0	SMF108MTMAXUSERS	4	binary	maximum number of users
4	4	SMF108MTMAXCONTR	4	binary	limit for number of concurrent transactions
8	8	SMF108MTMAXCONSES	4	binary	maximum number of sessions to run concurrently
12	C	SMF108MTSESTIMEOUT	2	binary	number of minutes in timeout
14	E	SMF108MTUPMAX	2	binary	maximum number of concurrent update tasks
16	10	SMF108MTMAILBOXES	2	binary	maximum number of mail.box'es
18	12	SMF108MTREPMAX	2	binary	maximum number of replicators (concurrent)
20	14	SMF108MTNSFPOOL	4	binary	maximum size of nsf buffer pool (bytes/4096).
24	18	SMF108MTNSFPOOLIU	4	binary	number of bytes in nsf buffer pool (in use)
28	1C	SMF108MTDBCENAB	1	binary	dbcache enabled = 1, 0 if disabled
29	1D	RESERVECHAR	3	N/A	reserved for alignment
32	20	SMF108MTDBCMAXE	4	binary	maximum number of dbcache entries
36	24	SMF108MTDBCCE	4	binary	number of dbcache (current entries)
40	28	SMF108MTDBCIDBO	4	binary	number of dbcache (initial db opens)
44	2C	SMF108MTDBCOCR	4	binary	number of dbcache (overcrowding rejections)
48	30	SMF108MTDBCHITS	4	binary	number of dbcache (hits)
52	34	SMF108MTDBCHWM	4	binary	dbcache (high water mark)
56	38	SMF108MTSATH	2	binary	server availability threshold
58	3A	SMF108MTSAX	2	binary	server availability index
60	3C	SMF108MTNIFS	4	binary	Database.NIFPool.Size (in bytes)
64	40	SMF108MTNIFN	4	binary	Database.NIFPool.Used
68	44	SMF108MTNSFS	4	binary	Database.NSFPool.Size (in bytes)
72	48	SMF108MTNSFN	4	binary	Database.NSFPool.Used
76	4C	SMF108MTDBPR	4	binary	number of Database.BufferPool Reads (no longer set by the server).
80	50	SMF108MTDBPW	4	binary	number of Database.BufferPool Writes (no longer set by the server).
84	54	SMF108MTMMXFER	2	binary	maximum number of mail transfer threads
86	56	SMF108MTMMXDLV	2	binary	maximum number of mail delivery threads

Offsets		Name	Length	Format	Description
88	58	SMF108MTMMXCONXFR	2	binary	maximum number of concurrent mail transfer threads

Subtype 6 - Data Base Activity

Self-Defining Section

This section contains the triplet fields (offset/length/number) that locate the specific sections for this subtype on the record.

Offsets		Name	Length	Format	Description
0	0	SMF108DBO	4	binary	Offset to Data Section
4	4	SMF108DBL	2	binary	Length of Data Section
6	6	SMF108DBN	2	binary	Number of Data Sections

Data Base Activity Data Section

This section contains the data for Domino Data Base activity.

Offsets		Name	Length	Format	Description
0	0	SMF108DBNAME	64	EBCDIC	Last 64 characters of the Data Base Name.
64	40	SMF108DBINDEX	4	binary	number of indexing operations started on this data base by the server.
68	44	SMF108DBREPS	4	binary	number of replications on this data base initiated by this server.
72	48	SMF108DBDOCADDS	4	binary	number of documents added to this data base.
76	4C	SMF108DBDOCDELS	4	binary	number of documents deleted from this data base.

Constants

Transaction Types

This table contains a brief description of the transaction types recorded above.

Table 1 (Page 1 of 5). Transaction Types

Decimal Type	Description
1	OPEN_DB_RQST
2	CREATE_DB_RQST
3	CLOSE_DB_RQST
4	GET_SPECIAL_NOTE_ID_RQST
5	ITEM_DEF_TABLE_RQST
6	OPEN_NOTE_RQST
7	UPDATE_NOTE_RQST
8	UPDATE_NOTE_RQST_ALT

Table 1 (Page 2 of 5). Transaction Types	
Decimal Type	**Description**
9	DELETE_NOTE_RQST
10	GET_NOTE_INFO_RQST
11	SET_SPECIAL_NOTE_ID_RQST
12	DB_INFO_GET_RQST
13	DB_INFO_SET_RQST
14	DB_MODIFIED_TIME_RQST
15	SEARCHSTART_RQST
16	SEARCHSTOP_RQST
17	SERVER_TIME_RQST
18	DELETE_DB_RQST
19	FILE_SUMMARY_RQST
22	DB_REPLINFO_SET_RQST
23	DB_REPLINFO_GET_RQST
24	GET_MODIFIED_NOTES_RQST
25	STAMP_NOTES_RQST
26	RENAME_DB_RQST
27	REPLICATE_RQST
28	LOOKUP_HELP_NOTE_RQST
29	DB_SPACE_USAGE_RQST
30	GET_OBJECT_SIZE_RQST
31	FREE_OBJECT_RQST
32	ALLOC_OBJECT_RQST
33	REALLOC_OBJECT_RQST
34	READ_OBJECT_RQST
35	WRITE_OBJECT_RQST
36	TEXT_SEARCH_RQST
37	ALLOC_UPDATE_OBJECT_RQST
38	FREE_UPDATE_OBJECT_RQST
39	GET_SERVER_STATS_RQST
40	FT_SEARCH_RQST
41	FT_CLOSE_SEARCH_RQST
42	COMPACT_DB_RQST
43	FT_GET_LAST_INDEXTIME_RQST
44	RELAY_EVENT_RQST
45	REMOTE_CONSOLE_RQST
46	FT_DELETE_INDEX_RQST
47	FT_INDEX_RQST
48	CLOSE_DB_RQST_ALT
49	CLOSE_COLLECTION_RQST_ALT
50	CREATE_COLLECTION_RQST
51	OPEN_COLLECTION_RQST

Table 1 (Page 3 of 5). Transaction Types	
Decimal Type	**Description**
52	CLOSE_COLLECTION_RQST
53	UPDATE_COLLECTION_RQST
54	UPDATE_FILTERS_RQST
55	READ_ENTRIES_RQST
56	LOCATE_NOTE_RQST
57	FIND_NOTEID_RQST
58	FIND_BY_KEY_RQST
59	NIFOPENNOTE_RQST
60	NIFSTAMPNOTES_RQST
61	GET_COLLECTION_DATA_RQST
62	ASYNC_NIFOPENNOTE_RQST
63	ASYNC_READ_ENTRIES_RQST
64	UPDATE_UNID_TABLE_RQST
65	SET_COLLATION_RQST
66	NIF_UPDATE_FOLDER_RQST
67	NIF_FOLDER_COUNT_RQST
68	NIF_PURGE_FOLDER_RQST
69	PURGE_COLLECTION_RQST
70	NIF_GET_IDTABLE_RQST
75	NAME_LOOKUP_RQST
76	GET_SERVER_NAMES_RQST
77	GET_SERVER_NAMES_LITE_RQST
78	NAME_GET_AB_RQST
79	NAME_LOOKUPID_RQST
80	ASYNC_NAME_LOOKUP_RQST
81	ME_LOOKUP_RQST32
101	GET_NAMED_OBJECT_ID_RQST
102	DB_READ_HIST_RQST
103	DB_WRITE_HIST_RQST
104	GET_NOTE_INFO_BY_UNID_RQST
105	POLL_DEL_SEQNUM_RQST
106	GET_MULT_NOTE_INFO_BY_UNID_RQST
107	ASYNC_CANCEL_RQST
108	ASYNC_OPEN_NOTE_RQST
109	ASYNC_READ_OBJECT_RQST
110	ASYNC_NOTIFICATION_RSP
111	SERVER_TIME_LITE_RQST
112	GET_SERVER_STATS_LITE_RQST
114	GET_REPLICA_MATCHES_RQST
115	ASYNC_URL_GET_HEADER_RQST
116	DB_LSEC_INFO_GET_RQST

Table 1 (Page 4 of 5). Transaction Types	
Decimal Type	**Description**
117	DB_LSEC_INFO_SET_RQST
118	GET_MULT_NOTE_INFO_RQST
119	DB_QUOTA_SET_RQST
120	DB_QUOTA_GET_RQST
121	SERVER_AVAILABLE_RQST
122	SERVER_AVAILABLE_LITE_RQST
123	SERVER_FIND_REPID_RQST
124	SERVER_FIND_REPID_LITE_RQST
125	OPEN_NOTE_BY_URL_RQST
126	ASYNC_OPEN_NOTE_BY_URL_RQST
127	AUTHENTICATE_RQST
128	UPDATE_FOLDER_RQST
129	PURGE_FOLDER_RQST
130	COPY_FOLDER_RQST
131	START_FOLDER_REPL_SOURCE_RQST
132	START_FOLDER_REPL_DEST_RQST
133	GET_FOLDER_REPL_OPS_RQST
134	APPLY_FOLDER_REPL_OPS_RQST
135	END_FOLDER_REPL_SOURCE_RQST
136	END_FOLDER_REPL_DEST_RQST
137	FOLDER_GETIDTABLE_RQST
138	DB_ADMIN_FUNC_RQST
139	DB_ADMIN_SET_RQST
140	DB_ADMIN_GET_RQST
141	DB_FTSIZE_GET_RQST
142	START_SERVER_RQST
143	RUNDOWN_TRANS_RQST
144	ASYNC_RUNDOWN_RQST
145	DB_GET_PURGE_INFO_RQST
146	DB_GETSET_DEL_SEQNUM_RQST
147	DB_DIRLINK_GET_RQST
148	DB_DIRLINK_SET_RQST
149	DB_SET_TRUNC_INFO_RQST
150	SCHED_RQST
151	ASYNC_SCHED_RQST
152	COPY_OBJECT_RQST
153	ASYNC_REMOTE_CONSOLE_RQST
154	DB_STREAMMODE_SET_RQST
155	ASYNC_READ_OBJECT_BY_URL_RQST
156	GET_UNREAD_TABLE_RQST
157	SET_UNREAD_TABLE_RQST

Table 1 (Page 5 of 5). Transaction Types	
Decimal Type	**Description**
158	RUN_SERVER_AGENT_RQST
159	GET_TCP_HOSTNAME_RQST
160	ITEM_DEF_TABLE_EXT_RQST
161	GET_DBOPTIONS_RQST
162	SET_DBOPTIONS_RQST
163	PUT_QUEUE_MSG_RQST
164	ASYNC_TRACK_MESSAGE_RQST
165	MAIL_ROUTER_PUSH_RQST
166	FOLDER_GETMODTIME_RQST
167	COPY_FDO_RQST
168	GET_FDO_SIZE_RQST
169	SET_SUPERBLOCK_FDO_RQST
170	GET_SUPERBLOCK_FDO_RQST
171	REGISTER_MONITOR_RQST
172	DEREGISTER_MONITOR_RQST
173	MONITOR_GETEVENTS_RQST
174	SV_INFO_GET_RQST
175	GET_ARCHIVE_NOTES_RQST
176	PROFILE_ENUM_RQST
177	LOCK_NOTE_RQST
178	JS_GETSCHED_RQST
179	UNDELETE_NOTES_RQST
180	NSF_FIND_DESIGNNOTE_RQST
181	NSF_DESIGNNOTE_ENUM_RQST
182	GET_DBINFOFLAGS_RQST