University of Michigan Multi-Programming Supervisor

D6.0 Supervisor Call Descriptions

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Introductory Notes

The following SVC codes have been reserved for use by MTS installations other than UM:

129 - 159 (X'80' - X'9F') UBC
160 - 175 (X'A0' - X'AF') WSU
176 - 191 (X'B0' - X'BF') UQV

SVCs that reference storage check to see that the calling task has the appropriate access to the memory in question and if it does not the task is terminated with code SVCE. A major exception to this rule is the I/O returns list which is not checked to insure store access.

The SVCEQU macro in the file COPY:MISC*SAL may be used to generate EQUs for the SVCs described below. The macro is used as follows:

SVCEQU svcname{,svcname} . . .

where "svcname" is one of the names given in this description or a sublist of the form (name1,name2). "Name1" is a name from this description and "name2" is the name that will be used in the generated EQU statement.

JOBDUMP (JOBDMP)

Supervisor Call Description

Name:	JOBDUMP (JOBDMP)	Supervisor Call: 0
Function:	To get a dynamic dump, for debugging purposes, of the current job.	
Properties:	Slow, Privileged.	
Calling Sequence:	none.	
Return Value:	None. The operator is asked to supply the name of a tape drive, and the dump is put on that tape.	
Error Exit:	Up to 10 dumps may be stacked. If the JOBDUMP SVC is called while 10 dumps are stacked, a supervisor error occurs and a superdump is requested.	
Description:	All real memory and all virtual memory for the job (if the job is relocatable) is written on the dump tape. The programs MTS.:PRINTDUMP and DUMP:DUMPER may be used to print dumps. To request a dump for a job other than the current job see JBDUMP (SVC 17).	

POPTRA

Supervisor Call Description

Name:	POPTRA	Supervisor Call: 1
Function:	Combines SVCs POPQ and TRA.	
Properties:	Slow, Non-privileged (see below).	
Calling Sequence:	Same as SVC TRA (SVC 40).	
Return Value:	Doesn't return.	
Error Exit:	The job will be terminated with error SVCE if the region specified by GR1 is not addressable or if the resulting local CPU queue is empty and the SVC was issued from non-privileged user mode (see DEFDOM, SVC 91).	
Description:	SVC POPTRA is the same as SVC TRA (SVC 40) except that it pops the local CPU queue first. If the resulting CPU queue is empty, it is the same as SVC POPQ (SVC 12).	

STIO

Supervisor Call Description

Name: STIO Supervisor Call: 2

Function: Adds one or more commands to the I/O queue for a specified device to initiate an I/O operation.

Properties: Slow, Privileged.

Calling Sequence:

GR 0	bits 0-3	CAW key to use if bit 4 is on.
	bit 4	on -> use key in bits 0-3.
	bit 5	on -> do an SVC WAIT also.
	bit 6	on -> GR1 contains the number of channel programs, and GR2 points to a vector of three words for each. These three words are the same as GR0-GR2 in the standard call except that only bits 0-4, and bit 7 in the first word are used.
	bit 7	on -> this operation uses software command chaining (see description below).
	bit 8	on -> do an SVC ENDXIT also, using the fourth word of first returns list as address of the parameter area.
	bit 9	on -> do an SVC PCISU also, using the fifth word of the first returns list as the address of the parameter area.
	bit 10	on-> this is an OLTEP operation (see below).
	bit 11	on-> Format 1 CCWs in virtual channel program.
	bits 12-15	must be zero.
	bits 16-31	Logical Device Number.
GR 1	Location of CCW list or number of channel programs.	
GR 2	Location of returns list or location of list of channel programs.	

The returns list consists of at least 3 full-words aligned at a word boundary. The first word is storage for a normal return after an SVC WAIT, RESTORE, SKIP or SAVSKP. The second word contains the

return address for a unit exception condition, and the third word contains the return address for a unit check condition or channel error. The first word is normally filled in by an SVC WAIT, but must be filled in by the user if an SVC ENDXIT is used followed by an SVC RESTORE, SKIP or SAVSKP. The second and third words are not used following an SVC ENDXIT even if the I/O operation terminates with a unit check or unit exception, but they need to be filled in if an SVC RESTORE, SKIP or SAVSKP is used.

Return Value: None. Return is to the instruction following the SVC.

Error Exit: The job is terminated with code ILDN if bits 11-31 of GR0 contain an illegal logical device number. The job will terminate with code SVCE if the address of the CCW or the location of the returns list is not addressable, if GR0 bits six and ten are both set, if GR0 bits five and eight are both set, if GR0 bit six is set and GR1 contains a a value larger than 12, or if bit 7 of GR0 is set and the system is operating under the XA architecture. The job will also be terminated with code SVCE if this SVC is used when there is an entry on the active I/O that terminated abnormally and for which an SVC WAIT or ENDXIT has already been done.

Description: One or more I/O entries are added to the active I/O queue for the device indicated. The last entry address is set in the device table and, if the active queue is empty, the first and active entry address is set to point to the first new I/O entry. The supervisor then attempts to start the channel command program.

Command and data chaining as well as CIDA are permitted in a channel program. Incorrect length interrupts are ignored and not passed back to the job. Attention and program-controlled interrupts are passed back to the program if exits have been set up for them, otherwise they are ignored. Self-modifying CCWs will not work correctly from relocatable jobs or jobs that use special CCW lists (see below).

All of the CCWs in a channel program must be either format zero or format one; the format used is determined by bit 11 of GR0.

If bit 40 is set in the last CCW in a (hardware) chain, and if GR 0 bit 7 was set in the SVC STIO, this is interpreted as software command chaining. The operation will be restarted following device end, as if it had been command chained. It will not be restarted following incorrect length, and one CCW will be skipped following status modifier. The hardware command chaining bit should not be set in the same CCW with the software command chaining bit. Software command chaining is not supported under the XA architecture.

If GR0 bit 10 is set the sixth word of the returns list contains additional information as follows:

bit 0	on -> OLTEP Attention glitch.
bit 1	on -> bits 16-31 of this word contain a path (370 mode) or a CHPID (XA mode) to use.
bits 2-15	unused (should be zero).
bits 16-31	a path or CHPID if bit 1 is set.

In addition to standard CCW lists, two "special" CCW lists are accepted. A special CCW list is identified when bits 32-47 of the first "CCW" are all ones (X'FFFF'). In this case the CCW lists are assumed be in one of the following two formats as indicated by the halfword value in bits 48-63 of the first "CCW":

+0	halfword length of the following CCWs
+2	halfword length of data area following the CCWs
+4	X'FFFF' special CCW list flag
+6	X'0000' code used to indicate format of special CCW list
+8	CCWs which may not use CIDA, and which may use displacements rather than addresses. If displacements are used they are relative to the first CCW for TICs and relative to the data area otherwise. If an address is used it may not cross a page boundry.
+n	Data Area

or

+0	full-word virtual machine CAW
+4	X'FFFF' special CCW flag
+6	X'0001' code used to indicate format of special CCW list

The first format allows faster CCW translation, while the second format is used from within virtual machines with the CAW and the address in the associated CCWs being translated as virtual machine addresses (relocated to the virtual machine segment(s)).

WAIT

Supervisor Call Description

Name:	WAIT	Supervisor Call: 3
Function:	Wait for a device to signal the completion of an I/O operation.	
Properties:	Slow, Privileged.	
Calling Sequence:	GR 0 Logical device number	
Return Value:	CC=0 Non-immediate operation CC=1 Initial rejection of the command CC=2 Channel error CC=3 Immediate operation	
	Each SVC WAIT is associated with an SVC STIO which added an I/O request to the active I/O queue in the Device Table of the device indicated by the logical device number. When the I/O command initiated by the SVC STIO results in a unit exception (UE), unit check (UC), or channel error condition, the return is to the appropriate address indicated in the returns list specified by the associated STIO. Otherwise, the return is to the instruction following the SVC WAIT.	
Error Exit:	The job is terminated with an error code ILDN if the logical device number is incorrect. An SVC WAIT not preceded by an associated SVC STIO or preceded by an SVC WAIT, ENDXIT, XITPOP, or XITTRA for the same operation causes the job to terminate with a code SVCE.	
Description:	SVC WAIT permits processing to continue after the completion of an I/O operation. The instruction after the SVC WAIT is taken to be the normal return and its address is inserted in the returns list specified by the STIO associated with the SVC WAIT. The abnormal returns for unit exception (UE), unit check (UC), or channel error are specified in the returns list. For each STIO supervisor call, there must be a corresponding WAIT (or ENDXIT, SVC 39, XITPOP, SVC 42, or XITTRA, SVC 57) supervisor call, and vice versa.	

Upon return from the SVC WAIT, the condition code will have been set to indicate if the command was initially rejected (CC=1) or, if accepted, whether or not it was an immediate operation. A condition code of 1 or 2 can only occur with an abnormal return.

Normally, the end of operation waited for is device end. By using the SVC CEWAIT (SVC 68), a particular device can be conditioned so that the wait is for channel end instead.

The functions of SVC WAIT are available as an option from SVC STIO (SVC 2).

Note that this SVC is able to store the return address into the first word of the returns list even if the the current PSW and storage keys would normally prevent the task from modifying that word.

DORMANT (DORMNT)

Supervisor Call Description

Name:	DORMANT (DORMNT)	Supervisor Call: 4
Function:	Places the current job at the bottom of a global CPU queue.	
Properties:	Slow, Non-privileged.	
Calling Sequence:	None.	
Return Value:	None.	
Error Exit:	None.	
Description:	The current job, represented by an active entry on a global CPU queue, is forced to quantum end. At quantum end a job will be placed (a) at the bottom of the global CPU queue that it is currently on, (b) at the bottom of the next lower priority global CPU queue, or (c) at the bottom of the lowest priority global CPU queue. This SVC can be used to give other jobs access to a CPU, but it does not guarantee that all jobs that are waiting for a CPU will get one before the current job is again dispatched. The name of this SVC and the name used by the TASKSTAT subroutine to describe a task that has no entry on its local CPU queue often cause a bit of confusion. This SVC does not change the task's local CPU queue in any way.	

RESCNT

Supervisor Call Description

Name:	RESCNT	Supervisor Call: 5
Function:	Obtain the residual count of a command after data transmission.	
Properties:	Fast, Non-privileged.	
Calling Sequence:	GR 0 Logical device number	
Return Value:	GR 0 Residual count	
Error Exit:	An illegal logical device number causes the job to terminate with a code of ILDN.	
Description:	The residual count which is obtained with the supervisor call is associated with the last I/O operation WAITed for. The residual count can be used to determine the number of bytes that were actually transmitted or received in an operation. The residual count is also returned by SVC DEVINFO (SVC 73).	

EXIT (END)

Supervisor Call Description

Name:	EXIT (END)	Supervisor Call: 6
Function:	Terminates the job (task) with code "O.K.".	
Properties:	Slow, Non-privileged.	
Calling Sequence:	None.	
Return Value:	None.	
Error Exit:	None.	
Description:	The job is terminated and all its devices and storage are freed. If an SVC SETXIT (SVC 36) has been executed previously, this attempted exit will be trapped.	

WRITE

Supervisor Call Description

Name:	WRITE	Supervisor Call: 7
Function:	Writes a message on the operator's console.	
Properties:	Slow, Privileged.	
Calling Sequence:	GR 0 Number of characters in message. GR 1 Location of first character in message.	
Return Value:	None. Return is immediate.	
Error Exit:	The job terminates with the code SVCE if any part of the message is not addressable or the length in GR0 is negative.	
Description:	The message specified in the calling sequence is displayed on the system console preceded by the job number and the job name. Messages longer than 100 characters are truncated. Installations using the 3270 OPERATOR job should note that only 65 to 72 characters of message text will actually be displayed on the 3270 console screen unless the %WRAP option has been turned on. The full message will always be printed on the log printer if one is in use.	

SAVE

Supervisor Call Description

Name:	SAVE	Supervisor Call: 8
Function:	Transfers Active I/O queue to top of Saved I/O queue.	
Properties:	Fast, Privileged.	
Calling Sequence:	GR 0 Logical device number	
Return Value:	None.	
Error Exit:	The job is terminated with code ILDN if the logical device number is illegal.	

Description:

SVC SAVE stacks the Active I/O queue onto the Saved I/O queue, leaving the Active I/O queue empty. With the Active I/O queue cleared, a new I/O operation may be issued using the SVC STIO, or the SVC SPWAIT may be issued to wait for a stray device end signal. The I/O entry (or entries) on the Saved I/O queue must eventually be returned to the Active I/O queue or deleted. An entry is added to the Active I/O queue on each SVC STIO and is removed from the Active I/O queue on the successful (normal) completion of the operation. When an abnormal condition occurs, the abnormal return (UE, UC, or channel error) is taken but the I/O entry is not removed from the queue. Subsequent action must make use of the SVC SAVE followed by at least one of the following:

SVC SKIP
SVC DELETE
SVC RESTOR

An SVC SAVE should not be issued while a device is busy. That is, it should be issued only after an abnormal return from an SVC WAIT, etc. It is a no-op in all other cases.

See also SVC SAVESKIP (SVC 18).

RESTOR

Supervisor Call Description

Name:	RESTOR	Supervisor Call: 9
Function:	Transfers Saved I/O queue to bottom of Active I/O queue.	
Properties:	Slow, Privileged.	
Calling Sequence:	GR 0 Logical device number in bits 16-31. Bits 0-15 are ignored.	
Return Value:	None. Return is to the address specified in the first word of the returns list associated with the top entry of the I/O queue. This word is normally filled in by an SVC WAIT.	
Error Exit:	The job is terminated with code ILDN if the logical device number is illegal and with code SVCE if the resulting Active I/O queue is empty.	
Description:	SVC RESTOR chains the Saved I/O queue to the bottom of the Active I/O queue, leaving the Saved I/O queue empty. The top entry on the I/O queue is then used to activate the device if it is idle. The job is then put in WAIT status at the location specified by the first word of the returns list associated with the top entry on the I/O queue waiting for completion of the I/O operation. This supervisor call may be used when it is desired to redo an I/O operation after an abnormal condition. It should not be called if the resulting Active I/O queue would be empty. Once it has added the saved I/O queue to the active I/O queue, SVC RESTOR behaves exactly like SVC WAIT, except that the PSW is set from the first word of the returns list instead of vice versa. If SVC RESTORE is used following an abnormal return from an SVC ENDXIT rather than an SVC WAIT it is the task's responsibility to see that the first word of the returns list is filled in with a legal address. An SVC RESTORE following an ENDXIT would normally be preceeded by an SVC POPQ or FLUSH.	

DELETE

Supervisor Call Description

Name:	DELETE	Supervisor Call: 10
Function:	Removes the top entry on the Saved I/O queue.	
Properties:	Fast, Privileged.	
Calling Sequence:	GR 0 Logical device number	
Return Value:	CC=0 Saved I/O queue empty CC=1 Saved I/O queue not empty	
Error Exit:	The job is terminated with code ILDN if the logical device number is illegal.	
Description:	SVC DELETE removes the top entry on the Saved I/O queue and sets the condition code to zero if the resulting Saved I/O queue is empty, and to one otherwise. If it is desired to delete the complete Saved queue, this supervisor call must be issued repeatedly until the queue is empty. If the queue is already empty, the supervisor call is ignored and the condition code is set to zero.	

READ

Supervisor Call Description

Name:	READ	Supervisor Call: 11
Function:	Reads a line from the operator's console.	
Properties:	Slow, Privileged.	
Calling Sequence:	GR 1 Location to read message into.	
Return Value:	GR 0 Number of characters read. CC=0 Message was terminated by CANCEL. CC=1 Message received ok. CC=2 Message was truncated.	
Error Exit:	The job is terminated with code SVCE if the region to read into is not addressable.	
Description:	A request for input is displayed on the system console and upto 100 characters may be entered in response. The exact format of the request and the procedures required to respond will depend on the type of console being used. The number of characters read is returned in GR0. If the message was terminated by a CANCEL, the condition code is set to 0, if the message was truncated the condition code is set to 2, otherwise it is set to 1. This SVC no longer clobbers the GR0 value saved in the job table if the length of the response is returned while the task is executing at a higher level on its local CPU queue.	

POPQ

Supervisor Call Description

Name:	POPQ	Supervisor Call: 12
Function:	Remove the top entry in the calling job's local CPU queue.	
Properties:	Slow, Non-privileged (see below).	
Calling Sequence:	None.	
Return Value:	Doesn't return.	
Error Exit:	The job will be terminated with code SVCE if this SVC is issued in non-privileged user mode and there is only one level on the job's local CPU queue.	
Description:	The top entry (the one for the call to POPQ) on the local CPU queue for the calling job is removed and discarded. If there is a lower entry, because of a task interrupt, and if this entry is not waiting (SVC WAIT, SVC TWAYT, or SVC WAYT) then it is activated. If this lower entry is waiting it is activated when the event it is waiting for occurs. If there is no lower entry the job will not be activated until an interrupt for which an exit has been specified occurs. If the next lower entry (below the POPQ entry) is waiting and if an interrupt for which an exit has been specified occurs before the event waited for occurs, the exit will be made active and the local CPU queue entry that is waiting will again be the second entry. Certain attributes of a task (PSW key, DAT mode, virtual machine mode, user vs system mode, ...) are associated with its local CPU queue entry. When a new entry is placed on the local CPU queue some attributes are initialized from the previous local CPU queue entry while others are set to a standard default. The attributes may be changed by using the appropriate SVCs. When a POPQ is preformed the attributes are restored. The functions of an SVC POPQ are also available from the following SVCs: POPTRA, ATNPOP, PCIPOP, TIMER and XITPOP.	

SKIP

Supervisor Call Description

Name:	SKIP	Supervisor Call: 13
Function:	Forces a normal return from an I/O entry on the Saved I/O queue.	
Properties:	Slow, Privileged	
Calling Sequence:	GR 0 Logical device number in bits 16-31. Bits 0-15 are ignored.	
Return Value:	None. Return is to the address specified in the first word of the returns list associated with the top entry of the Saved I/O queue. This word is normally filled in by an SVC WAIT.	
Error Exit:	The job is terminated with code ILDN if the logical device number is illegal, or with code SVCE if the Saved I/O queue is empty or the Active I/O queue is not empty.	
Description:	The supervisor call SKIP is used to accept an abnormal condition and to return to the normal return associated with the operation. It is to be issued only when there is an entry on the Saved I/O queue and no entry on the Active I/O queue. The Saved I/O queue is moved to the Active I/O queue, clearing the Saved I/O queue, and the top entry in the I/O queue is then removed and its normal return added to the local CPU queue. If the I/O operation terminated with both unit check and unit exception, then an SVC SKIP after the unit check exit will cause entry to be made to the unit exception routine, rather than causing a normal return. See also SVC SAVESKIP (SVC 18).	

GETQS

Supervisor Call Description

Name:	GETQS	Supervisor Call: 14
Function:	Allow the PDP (Paging Drum Processor) to get the PIQ (Page In Queue) and the RPQ (Released Page Queue).	
Properties:	Fast, Privileged	
Calling Sequence:	None.	
Return Value:	GR 0 Location of head of RPQ. GR 1 Location of head of PIQ.	
Error Exit:	SVCE error if the job is relocatable.	
Description:	The supervisor gives the locations of the PIQ and RPQ to the PDP, and then starts new (empty) queues for itself.	

CLEAR

Supervisor Call Description

Name:	CLEAR	Supervisor Call: 15
Function:	Allow a job to become unperturbable.	
Properties:	Slow, Privileged	
Calling Sequence:	None.	
Return Value:	None.	
Error Exit:	None.	
Description:	All lower entries are removed from the job's local CPU queue. All further interrupts are prohibited. This SVC is used by MTS just before entering its SNARK Wayt, and in task termination.	

SPWAIT (DEWAIT)

Supervisor Call Description

Name:	SPWAIT (DEWAIT)	Supervisor Call: 16
Function:	To wait for a device end signal from a device.	
Properties:	Slow, Privileged	
Calling Sequence:	GR 0 Logical device number in bits 16-31, bit 0 may be set to prevent the device from being flagged "not ready" in the device list. GR 2 Location of returns list The returns list, like that used with the SVC STIO, consists of 3 full-words aligned at a word boundary. The first word is storage for the normal return, the second word contains the return address for a unit exception condition, and the third word contains the return address for unit check or channel error conditions.	
Return Value:	When a stray device end comes from the specified device (due to the device going from not-ready to ready), return is made as indicated in the returns list. The normal return is to the instruction following the SVC SPWAIT.	
Error Exit:	The job is terminated with code ILDN if the logical device number is illegal, or with code SVCE if the returns list is not addressible or if SVC SPWAIT is issued with a non-empty Active I/O queue.	
Description:	The SVC SPWAIT is used to provide an interlock to wait on a stray device end signal. A stray device end signal is generated by some devices whenever the device goes from a not ready to a ready state. Thus, this supervisor call can be used to wait for a not ready device to become ready. If a stray device end has already occurred, return is immediate. This supervisor call is like the supervisor call SVC STIO for no operation, followed by the SVC WAIT to wait for the device end signalling the completion of the operation, i.e., the device is ready. No I/O operation can be in progress when this supervisor call is issued,	

otherwise an SVCE error exit will be taken.

Normally this SVC causes bit 5 (X'04') of RDLBTS in the device list entry for the device to be set indicating that the device is "not ready". If bit 0 of GR0 is set when the SVC is issued the device is not flagged. The 3270 OPERATOR job uses this "not ready" bit to build the not ready devices line that appears near the top of the screen.

See also SVC ATNSU (SVC 29), SVC ATNPOP (SVC 30) and SVC ATNTRA (SVC 56).

JBDUMP (JBDMP)

Supervisor Call Description

Name:	JBDUMP (JBDMP)	Supervisor Call: 17
Function:	To cause a jobdump for a specific job.	
Properties:	Slow, Privileged	
Calling Sequence:	GR 5 Location of Job Table for job to be dumped.	
Return Value:	None. The operator is asked to supply the name of a tape drive, and the dump is put on that tape.	
Error Exit:	Up to 10 dumps may be stacked. If an 11th dump is requested a supervisor error occurs and a superdump is taken.	
Description:	This SVC is just like the JOBDUMP SVC (SVC 0), except that the job whose Job Table is pointed to by register 5, rather than the job issuing the SVC, is dumped. The programs MTS:PRINTDUMP and DUMP:DUMPER may be used to print the dump.	

SAVESKIP (SAVSKP)

Supervisor Call Description

Name:	SAVESKIP (SAVSKP)	Supervisor Call: 18
Function:	Forces a normal return after an abnormal condition.	
Properties:	Slow, Privileged	
Calling Sequence:	GR 0 Logical device number in bits 16-31. Bits 0-15 are ignored.	
Return Value:	None. Return is to the address specified by the first word of of the returns list associated with the top entry of the Active I/O queue.	
Error Exit:	The job is terminated with code ILDN if the logical device number is illegal.	
Description:	This supervisor call is a combination of SVC SAVE followed by SVC SKIP. It may be used when it is desired to accept an abnormal condition and take the normal return from an I/O operation. The Saved I/O queue is transferred to the Active I/O queue, leaving the Saved I/O queue empty. The top entry in the Active I/O queue is then removed and its normal return is added to the job's local CPU queue. If this SVC does not follow an SVC WAIT, etc., with no intervening SVC SAVE, it is exactly the same as SVC SKIP. Otherwise it is the same as SVC SAVE followed by SVC SKIP.	

SNSADR

Supervisor Call Description

Name: SNSADR Supervisor Call: 19

Function: Controls automatic sense on unit check.

Properties: Fast, Privileged

Calling Sequence:

GR 0 Logical device number.
GR 1 Pointer to sense area; this value is zero if no automatic sensing is desired.

Return Value: None. The contents of the general registers and the value of the condition code remain unchanged.

Error Exit: The job is terminated if the logical device number is incorrect, in which case the code is ILDN.

Description: The address in GR1 is stored in the device table and the automatic-sense flag is set in the device table. If a unit check condition is received from this device, the supervisor transfers the sense data it obtained to the sense area specified. The sense information starts at the second byte of the sense area. The low order 2 bits of the first byte are used as a flag to indicate the results of the sense command, and are set as follows:

0	No sense has been done.
1	The sense command was successfully completed.
2	Unit check was received while issuing the sense command.
3	Serious problems occurred (such as interface control check, etc.).

The high order 6 bits of the first byte are bits 42-47 from the CSW for the I/O operation that caused the unit check (i.e. the channel status). A sense flag value of X'FC' indicates that the device is physically offline (Condition code 3 from SIO or SIOF).

Up to 24 bytes of sense information are transferred, the actual number being determined by the device type. Note that this supervisor call needs to be issued only once (for each device) if automatic sensing is always desired. Note also that the supervisor always does a sense following unit checks, even if this SVC has not been issued.

See also SVC DEVINFO (SVC 73) and SVC GETSNS (SVC 74) also.

GETID

Supervisor Call Description

Name:	GETID	Supervisor Call: 20
Function:	Obtain device name	
Properties:	Fast, Non-privileged	
Calling Sequence:	GR 0 Logical device number	
Return Value:	GR 0 Four character device name	
Error Exit:	The job is terminated with error code ILDN if the logical device number is incorrect.	
Description:	The four character device name (not device type) is returned in GR0. It may then be used in error messages concerned with the device. See DEVINFO (SVC 73) also.	

GETUNIT (GTUNIT)

Supervisor Call Description

Name:	GETUNIT (GTUNIT)		Supervisor Call: 21
Function:	Obtain a specified unit for the use of the calling job.		
Properties:	Fast, Privileged		
Calling Sequence:	GR 0	bit 0	on ->wait if the requested device is busy.
		bit 1	on ->request normal return if the LDN is already
		bit 2	on ->Don't issue VM ATTACH command, (if running under VM and device would normally be acquired by ATTACH).
		bits 16-31	Logical Device Number to be associated with the device.
	GR 1	Unit type (4 char name) or zero	
	GR 2	Unit name (4 char name) if needed	
Return Value:	CC=0	Unit allocated successfully	
	CC=1	Unit does not exist or LDN already in use and bit 1 of GR 0 is set	
	CC=2	Unit is already allocated to some task	
	CC=3	Unit is offline	
	GR 1	Device table location unless CC=1	
	GR 2	Device list location unless CC=1	
Error Exit:	The job is terminated with the error code ILDN if the logical device number is illegal or if the LDN is already in use and bit 1 of GR 0 is not set.		
Description:	GR1 must contain a unit type such as "RDR" or "9TP" (left justified with trailing blanks) and if more than one device of this type is attached to the machine then GR2 must contain the name of this device (all current names happen to be 4 character names, but if they were fewer, the name would have to be right justified with leading blanks). The device list is searched for the specified device and if it is found and is available it is allocated to the calling job so that the		

logical unit number in GR0 refers to it. If GR1 is zero it is ignored and only the name given in GR2 is used to find the device. The device table and device list locations are returned in GR1 and GR2 unless the device does not exist (condition code 1).

If the system is running under an XA-mode VM system, and bit 2 of GR0 is off, and the device to be attached is offline, has no subchannel number, and is listed in the VM device list, the system will attempt to issue a VM ATTACH command to obtain the device.

FREEUNIT (FRUNIT)

Supervisor Call Description

Name:	FREEUNIT (FRUNIT)		Supervisor Call: 22
Function:	Free a unit for use by another job.		
Properties:	Fast (see below), Privileged		
Calling Sequence:	GR 0	bit 0	1 -> return normally if the LDN is not in use.
		bit 1	1 -> OK to issue VM DETACH command.
		bits 2-15	unused
		bits 16-31	Logical device number
Return Value:	CC=0	Unit freed.	
	CC=1	LDN not in use and bit 0 of GR 0 set.	
Error Exit:	The job is terminated with code ILDN if the logical device number is invalid or if the LDN is not in use and bit 0 in GR 0 is not set.		
Description:	All further I/O activity on the unit is inhibited and the device is released for use by other jobs. The SVC may be "slow" rather than "fast" if another job was waiting for the device being freed. If this SVC is used while the active I/O queue for the device is active a Halt Device (HDV) operation will be preformed and loss of data could result. If the system is running under an XA VM system and the device was attached by a VM ATTACH command during GTUNIT processing, and if bit 1 of GR0 is on, a VM DETACH command will be issued to deallocate the device.		

GETBUF

Supervisor Call Description

Name:	GETBUF	Supervisor Call: 23
Function:	Obtain a region of storage (called a buffer for historical reasons) for use by the calling job.	
Properties:	Slow, Privileged	
Calling Sequence:	GR 0 Logical buffer number (only for absolute jobs) GR 1 Size of region wanted (in bytes)	
Return Value:	CC=0 Storage allocated. CC=1 Region requested was too large (see below). -- or - For relocatable jobs only, the the allocation would lie in a Named Address Space not owned by the calling task, or would cause an overlap between two Named Address Spaces or between a Named Address Space and the task's private storage. CC=2 No storage available. GR 1 Location of first byte of region. First word of region: length of region.	
Error Exit:	The job will be terminated with code ILBN if the buffer number is incorrect or already in use (absolute jobs only).	
Description:	For absolute jobs, an attempt is made to obtain a region of supervisor storage of the size requested, which must be no more than one page. The address of the region is placed in the job's job table entry for the given logical buffer number. For relocatable jobs, the supervisor attempts to obtain enough contiguous pages to satisfy the request starting in the lowest system segment and ending in or below the last system segment. SVC	

GETSEG (SVC 129) should be used to request storage beginning in other segments. The region of storage returned consists of an integral number of pages aligned on a page boundary. Routines in the task do storage suballocation for smaller chunks and accounting. If this is the first VM allocation for the job then the address of the storage obtained is placed in the job's job table entry associated with logical buffer number one (for MTS tasks this will be the address of the MTS DSECT).

For relocatable jobs, condition code one will be returned if the number of pages requested cannot be allocated in a contiguous block within the system segments (due to previous allocations) or if the allocation would conflict with any active named address spaces attached in one or more of the system segments.

FREEBUF (FREEBF)

Supervisor Call Description

Name:	FREEBUF (FREEBF)	Supervisor Call: 24
Function:	Release a region of storage allocated by the GETBUF and GETSEG SVCs.	
Properties:	Slow, Privileged	
Calling Sequence:	GR 0 Logical buffer number (absolute jobs only) Length of region to free, in bytes (for relocatable jobs). GR 1 Location of first byte of region.	
Return Value:	CC=1 Storage freed. CC=2 The storage is within a named address space which is owned by the calling task but for which there are other active accesses. CC=3 The storage is within a named address space which is not owned by this task -- or - The storage is not entirely within either a single named address space owned by this task or entirely within the task's private VM	
Error Exit:	Absolute jobs will be terminated with code ILBN if the logical buffer number given in GR0 is incorrect. Relocatable jobs will be terminated with code ILBN if no PCB chain exists for the job, the region to be freed is not aligned on a page boundry, is not a valid private VM address, is not in use, or if the length of the region to be freed is negative.	
Description:	For absolute jobs the address given must be the address returned in GR1 by a GETBUF or GETSEG SVC. The entire region is freed. For relocatable jobs GR1 must point to a page boundary, and GR0 will be rounded up to the next even page. Condition code 2 will be returned if the storage is within a named address space which the calling task owns but to which other tasks have (active or inactive) accesses.	

Condition code 3 will be returned if the storage is within a named address space which the calling task does not own, or if the storage overlaps between two or more named address spaces or between one or more named address spaces and the task's private virtual memory.

GCCWAD

Supervisor Call Description

Name:	GCCWAD	Supervisor Call: 25
Function:	Provide certain information about an I/O operation particularly one which resulted in an error.	
Properties:	Fast, Non-privileged	
Calling Sequence:	GR 0 Logical device number	
Return Value:	CC=0 Protect was not on for the operation CC=1 Protect was on for the operation GR 0 Left half of CSW GR 1 Location of first CCW on saved I/O queue GR 2 Location of STIO returns list	
Error Exit:	The job will be terminated with code ILDN if the logical device number is illegal.	
Description:	GR0 will always contain the left half of the CSW for the last operation performed on the device. If the saved I/O queue is empty, the other registers and condition code remain unchanged. Otherwise, the other return values will be determined from the first entry on the saved I/O queue. See SVCs DEVSTAT (SVC 53), and DEVINFO (SVC 73) also.	

PROTON

Supervisor Call Description

Name:	PROTON	Supervisor Call: 26
Function:	Turn storage protect on.	
Properties:	Fast, Non-privileged	
Calling Sequence:	None.	
Return Value:	CC=0 Protect was off before the call. CC=1 Protect was on before the call.	
Error Exit:	None.	
Description:	Until the first time this SVC is called by a job, the job runs with PSW key of zero. After this routine is called it runs with PSW key as given in the local CPUQ entry which will normally be 1, but which may be changed using SETPSWKEY (SVC 87).	

KILL

Supervisor Call Description

Name:	KILL	Supervisor Call: 27
Function:	Get rid of some other job in this system.	
Properties:	Slow, Privileged	
Calling Sequence:	GR 5 Location of job table for job to be axed. GR 10 Stop code to be used in terminating the job.	
Return Value:	None.	
Error Exit:	The job will be terminated with an SVCE error if the value in GR5 is not a valid job table location.	
Description:	The job specified by GR5 is terminated with the error code in GR10.	

TOD

Supervisor Call Description

Name:	TOD	Supervisor Call: 28
Function:	Get time of day and date as character string. (See also SVC GETELT (SVC 38), SVC BINTIM (SVC 69), SVC GETELT2 (SVC 81), and SVC TIMERU (SVC 141) for other forms of time and/or date)	
Properties:	Fast, Non-privileged	
Calling Sequence:	None.	
Return Value:	GR 0-1 Time of day GR 2-3 Date	
Error Exit:	None.	
Description:	The time is in the form HH:MM:SS where HH, MM, and SS are hours, minutes, and seconds respectively. For example, 23:14:33. The date is in the form MM-DD-YY where MM, DD, and YY are month, day, and year, respectively. For example, February 23, 1970 is 02-23-70.	

ATNSU

Supervisor Call Description

Name:	ATNSU		Supervisor Call: 29
Function:	Set up an exit for an attention interrupt or stray device end on a device.		
Properties:	Slow, Privileged		
Calling Sequence:	GR 0	bit 0	on -> exit on stray device end
		bit 1	on -> don't exit on attention
		bit 2	on -> don't mark as not ready even if bit 0 is on
		bits 3-31	Logical device number
	GR 1	Address of parameters or zero.	
Return Value:	None.		
Error Exit:	The job will be terminated with code ILDN if the logical device number is illegal or with error code SVCE if GR1 points to a location that is not addressable or not on a word boundary.		

Description:

GR1 must contain zero or the address of a 4 word area formated as follows:

Word 1:	Address of exit routine
Words 2-4:	Save area

If an attention interrupt (GR0 bit 1 not set) or a stray device end (GR0 bit 0 set) occurs on the device specified and the last call to ATNSU, ATNTRA, or ATNPOP had a non-zero GR1, then an entry is added to the top of the job's local CPU queue with the low order 4 bytes of the PSW obtained from word 1 of the area pointed to by GR1 in the call to ATNSU, ATNTRA, or ATNPOP. In addition, the job's GR0, GR1, and GR2 at the time of the interrupt are moved into words 2 to 4 of this area and byte 4 of the CSW (the device status) is moved to the first byte of this area. Finally, GR1 is loaded with the address of this area, GR0 is loaded with the location of the interrupt or zero if the job had

no local CPU queue entry, and GR2 is loaded with the second word of the local CPU queue entry. If GR1 contains zero when ATNSU is called, the exit is reset. The function of SVC ATNSU is also available as part of SVC ATNTRA and SVC ATNPOP.

ATNPOP

Supervisor Call Description

Name:	ATNPOP		Supervisor Call: 30
Function:	Set up attention or stray device end exit and remove the top entry from the job's local CPU queue.		
Properties:	Slow, Privileged		
Calling Sequence:	GR 0	bit 0	on -> exit on stray device end
		bit 1	on -> don't exit on attention
		bit 2	on -> don't mark as not ready even if bit 0 is on
		bits 3-31	Logical device number
	GR 1	Zero or address of parameter area	
	GR 2	Zero or address of general register save area	
Return Value:	Returns to next lower local CPU queue entry.		
Error Exit:	Same as SVC PCIPOP (SVC 32)		
Description:	Performs the functions of ATNSU followed by POPQ. If GR2 is non-zero it is assumed to contain the address of a region containing general registers 0 thru 15 in that order and the job's general registers are restored from this region.		

PCISU

Supervisor Call Description

Name:	PCISU	Supervisor Call: 31
Function:	Set up an exit for a PCI interrupt on a device.	
Properties:	Slow, Privileged	
Calling Sequence:	GR 0 Logical device number GR 1 Zero or pointer to parameter area	
Return Value:	None.	
Error Exit:	The job is terminated with code ILDN if the logical device number in GR0 is incorrect or with code SVCE if GR1 contains a location that is not addressable or not on a full-word boundary.	
Description:	This routine is the same as ATNSU except that the interrupt intercepted is PCI, not attention. The functions of SVC PCISU are available as an option from SVC STIO (SVC 2).	

PCIPOP

Supervisor Call Description

Name:	PCIPOP	Supervisor Call: 32
Function:	Set up a PCI exit for a device and remove the top entry from the job's local CPU queue.	
Properties:	Slow, Privileged	
Calling Sequence:	GR 0 Logical device number GR 1 Zero or pointer to a parameter area GR 2 Zero or address of general register save area	
Return Value:	Return is to next lower local CPU queue entry.	
Error Exit:	The job will be terminated with code ILDN if the logical device number in GR0 is illegal or with code SVCE if GR1 contains a location that is not addressable or not on a full-word boundary or GR2 contains a location that is not addressable.	
Description:	This routine performs the function of PCISU followed by POPQ. If GR2 is non-zero it is assumed to contain the address of a region containing general registers 0 thru 15 in that order and the job's general registers are restored from this region.	

FLUSH

Supervisor Call Description

Name:	FLUSH	Supervisor Call: 33
Function:	Clear lower entries from the job's CPU queue.	
Properties:	Slow, Non-privileged	
Calling Sequence:	None.	
Return Value:	None.	
Error Exit:	None.	
Description:	This supervisor call removes and discards all but the top entry on the job's local CPU queue so that when it returns there will be only one entry on it.	

PROTOFF (PROOFF)

Supervisor Call Description

Name:	PROTOFF (PROOFF)	Supervisor Call: 34
Function:	Turn off storage protect.	
Properties:	Fast, Privileged	
Calling Sequence:	None.	
Return Value:	CC=0 Protect was already off. CC=1 Protect was on before the call.	
Error Exit:	None.	
Description:	After a call to this routine the calling job will be running with PSW key zero. The storage keys of the storage it has attached are not affected. All jobs run with PSW key zero until they do an SVC PROTON (SVC 26).	

WAYT

Supervisor Call Description

Name:	WAYT	Supervisor Call: 35
Function:	Wait for an arbitrary event.	
Properties:	Slow, Non-privileged	
Calling Sequence:	GR 0 Mask in byte 0 and address in bytes 1-3	
Return Value:	None.	
Error Exit:	The job will be terminated with code SVCE if the location specified by GR0 (bytes 1-3) is not addressable.	
Description:	The top level in the job's local CPU queue is deactivated and will not get the CPU again until all bits specified by the mask in GR0 in the byte specified by the address in GR0 are zero. If an interrupt for which an exit has been specified occurs before the wait is up then the higher entry added to the job's CPU queue will be able to get the CPU, but neither the level calling WAYT nor any level below it can get the CPU until the wait is up. The job will be left on a global CPU queue during the wait if the address of the wait flag is in a shared memory segment. Otherwise it will be removed from the global CPU queues, since no other job could reset the wait flag without supervisor assist. See SVC SLEEP (SVC 64) also.	

SETXIT (SETERR)

Supervisor Call Description

Name: SETXIT (SETERR) Supervisor Call: 36

Function: Set end of job exit (trap).

Properties: Fast, Privileged

Calling Sequence: GR 0 Zero or pointer to parameter area.

Return Value: None.

Error Exit: The job will be terminated with error code SVCE if the address in GR0 is not addressable or not on a full-word boundary.

Description: If GR0 is non-zero it is assumed to contain the address of a 7 word parameter area formated as follows:

Word 1:	Address of exit routine
Word 2:	Termination code
Words 3-4:	PSW
Words 5-7:	Save area for GR0, 1, and 2

When the job is terminated for any reason except BLST and this is exit is set up, then the following things are done:

1. An entry is added to the top of the job's local CPU queue using Word 1 of the parameter area as the right half of the PSW.
2. The termination code is stored in Word 2 of the parameter area.
3. The job's GR0, 1, and 2 at the time of the termination are placed in Words 5-7 of the parameter area.
4. The job's current PSW is placed in Words 3 and 4 of the parameter area.
5. The address of the parameter area is

placed in the job's GR1.

6. The second word of the job's previous local CPU queue top entry is placed in GR2, except for termination code PGNT or PAGE, in which case GR2 will contain control register 2 at the time of the interrupt.
7. The exit is reset.

If GR0 is zero for a call to SETXIT, then the job termination exit will be reset.

For PGNT and SVC termination codes only, the DAT (SVC 133), SWPTRA (SVC 131), SWPTRAEC (SVC 139) and TRAX (SVC 71) with the DAT option take precedence.

The following codes are currently in use:

ASAD	Asynchronous addressing error
ASPG	Asynchronous page-in failure
ATTN	KILL SVC issued from the GOOSE job program.
BLST	KILL SVC issued from the BLAST job program.
FREE	KILL SVC issued due to a HASP $RERUN.
ILBN	Illegal Logical Buffer Number.
ILDN	Illegal Logical Device Number.
KILL	KILL SVC issued from the STOP job program.
M/C	Machine Check.
MCAL	Monitor call trap
NOVF	Vector facility failure
O.K.	SVC EXIT issued from current job.
PAGE	Page-in failure.
PGNT	Program Interrupt.
SCVE	Invalid SVC.
SVC	An SVC exit in DAT or virtual machine mode (see SVC TRAX, DAT, SWPTRA, or SWPTRAEC).

The following instructions will be simulated if they are not present on the machine and thus will not result in an operation exception for the task (even if executing in virtual machine mode):

BAS, BASR, and SLT.

HALTIO

Supervisor Call Description

Name:	HALTIO	Supervisor Call: 37
Function:	Stop an I/O operation.	
Properties:	Fast, Privileged	
Calling Sequence:	GR 0 Logical device number	
Return Value:	CC=0 Haltio executed. CC=1 Haltio not executed, I/O operation waiting for SIO to be executed. CC=2 Haltio not executed, either no I/O operation on active I/O queue or the I/O operation is already complete. CC=3 Haltio failed or couldn't be executed.	
Error Exit:	The job will be terminated with code ILDN if the logical device number is illegal.	

Description:

A halt I/O instruction will be executed for the device if all of the following conditions are met:

1. The active I/O queue is non-empty.
2. The top entry in the active I/O queue is not ended.
3. The device is busy and no error has been detected.
4. Either the channel is not operating in burst mode or this device is operating in burst mode.

GETELT

Supervisor Call Description

Name:	GETELT	Supervisor Call: 38
Function:	Obtain elapsed CPU time in 360 timer units and time of day. See also the BINTIM SVC (SVC 69), TOD SVC (SVC 28), GETELT2 SVC (SVC 81), and TIMERU SVC (SVC 141) for the time in different units.	
Properties:	Fast, Non-privileged	
Calling Sequence:	None.	
Return Value:	GR 0 Problem state CPU time GR 1 Supervisor state CPU time GR 2 Time of day	
Error Exit:	None.	
Description:	The values in GR0 and GR1 are the CPU time charged to the calling job in timer units. This is the time since the job was initiated. (One timer unit is 13 1/48 microseconds (one 256th of one 300th of a second)) The value in GR2 is the number of 300ths of a second since midnight.	

ENDXIT

Supervisor Call Description

Name:	ENDXIT	Supervisor Call: 39
Function:	Set up end of operation exit for specified device.	
Properties:	Slow, Privileged	
Calling Sequence:	GR 0 Logical device number GR 1 Pointer to parameter area	
Return Value:	None.	
Error Exit:	The job will be terminated with code ILDN if the logical device number in GR0 is invalid or not in use or with code SVCE if GR1 contains zero or a value not addressable or not a multiple of four. It will also be terminated with code SVCE if either the I/O device has no operation on the active queue or an SVC WAIT, ENDXIT, XITTRA or XITPOP has been previously executed for the operation on the top of the active queue.	
Description:	This SVC , SVC XITPOP or SVC XITTRA is to be used instead of SVC WAIT when it is desired to interrupt the job at the end of an I/O operation instead of waiting for the operation to end. One of these SVC's must be used for every I/O operation, but no two of them can be used for the same operation. After an SVC ENDXIT, SVC XITTRA, or SVC XITPOP is executed for a device and the top operation on that device's active queue is completed (either with or without an error) an entry will be added to the top of the job's local CPU queue using as the low order 3 bytes of the PSW the low order 3 bytes of word 1 of the parameter area specified by GR1 in the call to ENDXIT, XITTRA, or XITPOP. In addition, the device status will be moved into the first byte of this area and the job's GR0, GR1, and GR2 at the time of the exit will be stored in words 2, 3, and 4 of the area. The job's register GR0 will be loaded with the right half of the PSW at the time of the exit with byte 2 of the PSW in the register's high byte (GR0 will be zero if the job had no local	

CPU queue entry). GR1 will be loaded with the address of the parameter area, and GR2 will be loaded with the second word of the previous local CPU queue entry. The condition code will be set as it would have been after an SVC WAIT for the same operation: zero means a non-immediate operation, one means initial rejection of the command, two means channel error, and three means an immediate operation.

At the time of the exit the status of the I/O device and the I/O queues for the device are the same as if an SVC WAIT had been executed for the device and any of the error recovery SVC's may be used if appropriate. If SVCs SKIP or RESTOR are to be used after one of these exits, the first word of the returns list must be set by the task, since no SVC WAIT is used. The first byte of the parameter area at the time of the exit indicated what kind of error occurred on the I/O operation. If bit 6 is on a unit check occurred and if bit 7 is on a unit exception occurred.

If the top operation on the I/O queue has been completed at the time of the SVC ENDXIT, XITTRA, or XITPOP, the exit will be taken at that time.

The functions of SVC ENDXIT are also available as part of the following SVCs: STIO, XITTRA, and XITPOP.

TRA

Supervisor Call Description

Name:	TRA	Supervisor Call: 40
Function:	Restore registers and transfer without using a base register.	
Properties:	Slow, Non-privileged	
Calling Sequence:	GR 0 Right hand half of a PSW GR 1 Location of register save area	
Return Value:	Doesn't return.	
Error Exit:	The job will be terminated with error SVCE if the region specified by GR1 is not addressable.	
Description:	The job's general registers are restored from the region indicated by GR1 (which must contain GR0 thru GR15 in that order) and the right half of the job's PSW is set to the contents of GR0. The functions of SVC TRA are also available from the following SVCs: POPTRA, TRAX, ATNTRA, XITTRA, SWPTRA, SWPTRAEC.	

STARTJOB (STRTJB)

Supervisor Call Description

Name:	STARTJOB (STRTJB)	Supervisor Call: 41
Function:	Start a new job (task). (See also SVC STARTASK (SVC 134).)	
Properties:	Slow, Privileged	
Calling Sequence:	GR 0 Character count of text. GR 1 Location of text.	
Return Value:	CC=0 Job successfully initiated. CC=1 No free job tables. CC=2 Too many parameters. CC=3 HASP isn't running or job name not in job list. GR 0 Job number assigned to the job just started.	
Error Exit:	The job is terminated with code SVCE if the length in GR0 is negative or any part of the text specified by GR0 and GR1 is not addressable.	
Description:	The text indicated by registers 0 and 1 is treated as if it had been typed in on the operator's console. It consists of one or more fields separated by blanks, the first of which is the name of the job to be started, or, if the first character is a dollar sign ($), then the whole line is passed to HASP as a HASP command.	

XITPOP

Supervisor Call Description

Name:	XITPOP	Supervisor Call: 42
Function:	Set up an end of operation exit and return to the point of a previous interrupt.	
Properties:	Slow, Privileged	
Calling Sequence:	GR 0 Logical device number GR 1 Location of a parameter area GR 2 Location of a register save area or zero	
Return Value:	Return is to next level on job's local CPU queue.	
Error Exit:	Same as for SVC ENDXIT plus the job will be terminated with code SVCE if GR2 contains a location that is not addressable.	
Description:	This SVC has the same effect as an SVC ENDXIT but it also removes the top entry on the job's local CPU queue at the time of the SVC and, if GR2 is non-zero, restores the job's general registers from the region indicated by GR2. This region must contain registers 0 thru 15 in that order. The POPQ and restore will always be done before the interrupt, even if the operation is already complete.	

NOP

Supervisor Call Description

Name:	NOP	Supervisor Call: 43
Function:	Do nothing.	
Properties:	Slow, Non-privileged	
Calling Sequence:	None.	
Return Value:	None.	
Error Exit:	None.	
Description:	Nothing is done as fast as possible. This is useful when debugging and it is desired to leave an SVC call in but have it do nothing.	

STATENT

Supervisor Call Description

Name:	STATENT	Supervisor Call: 44
Function:	Makes an entry to the statistics gathering facility for arbitrary user-specified information.	
Properties:	Slow, Non-privileged	
Calling Sequence:	See Computing Center Memo 393.	
Return Value:	GR1 contains the address of the third word of the new entry.	
Error Exit:	The job will be terminated with code SVCE if the data isn't addressable or if it crosses a page boundry.	
Description:	See Computing Center Memo 393.	

MIGSTAT

Supervisor Call Description

Name:	MIGSTAT	Supervisor Call: 45
Function:	Notify the supervisor that the PDP is migrating a page.	
Properties:	Slow, Privileged	
Calling Sequence:	GR 1 PCB location	
Return Value:	None.	
Error Exit:	SVC error if caller is not an absolute job.	
Description:	Enters statistics item for page migration if data collection is enabled for the job that owns the page.	

GETRP

Supervisor Call Description

Name:	GETRP	Supervisor Call: 46
Function:	This SVC is used by the PDP (Paging Drum Processor) to get a page of real memory to read a page from the drum into.	
Properties:	Fast, Privileged	
Calling Sequence:	GR 1 Location of the PCB (Page Control Block) for the page that will be read in.	
Return Value:	CC=0 No pages available. CC=1 Page was allocated. GR 1 Location of the page allocated.	
Error Exit:	The job is stopped with code SVCE if it is not an absolute job or if the real memory address field in the PCB is not zero.	
Description:	If a real memory page is available (according to the supervisor's algorithm), it is allocated and the supervisor fills in the RCA (Real Core Address) field of the PCB. The location is also put in GR1 and the condition code is set to one. If no page is available, return is made with condition code zero. The page will be cleared if PCBXA is zero.	

GETSC

Supervisor Call Description

Name:	GETSC	Supervisor Call: 47
Function:	To allocate a region of supervisor (real) memory for absolute jobs.	
Properties:	Fast, Privileged	
Calling Sequence:	GR 0 Length (in bytes) or region desired. Maximum size is one page.	
Return Value:	CC=0 Storage was allocated. CC=1 No storage available. GR 1 Location of first byte of region allocated.	
Error Exit:	If the request is larger than a page, the job will be terminated with code SVCE.	
Description:	The supervisor will allocate a block of storage of the length requested if it can. This storage is not associated with the job that requested it, so the job must explicitly release it when through. In particular, if the job goes south, the storage will not be released by the task termination cleanup procedures.	

FREESC

Supervisor Call Description

Name:	FREESC	Supervisor Call: 48
Function:	Release a block of supervisor storage that was obtained with the SVC GETSC.	
Properties:	Fast, Privileged	
Calling Sequence:	GR 0 Length (in bytes) of the region to be freed. GR 1 Location of first byte of region.	
Return Value:	None.	
Error Exit:	The calling job will be terminated with code SVCE if GR0 is greater than 4096 or GR1 is an address below A(ADBUF).	
Description:	The block of storage as described by registers 0 and 1 is freed for reuse. This block had better be all or part of a region that was obtained with SVC GETSC. There are no checks and whatever was specified is freed. In particular, if register 1 is zero then page zero will be freed, leading to a fatally upset supervisor.	

GETWP

Supervisor Call Description

Name:	GETWP	Supervisor Call: 49
Function:	Allow the PDP (Paging Drum Processor) to obtain pages to write out to the drum.	
Properties:	Fast, Privileged	
Calling Sequence:	GR 0 Maximum number of pages wanted.	
Return Value:	GR 0 Number of pages actually returned. GR 1 Location of the PCB (Page Control Block) of the first one (they are chained), or zero if none were returned.	
Error Exit:	The calling job will be terminated with exit code SVCE if it is not absolute.	
Description:	The supervisor decides if any pages are to be written out. If not, it returns zero in register 1. If some are to be written, the supervisor selects which ones and how many (up to the maximum specified in GR0) and returns these. This is usually the top entries on the POQ (Page Out Queue), with some exclusions.	

FREERC

Supervisor Call Description

Name:	FREERC	Supervisor Call: 50
Function:	Allow the PDP (Paging Drum Processor) to free the real memory for a page it has just written out to the drum.	
Properties:	Fast, Privileged	
Calling Sequence:	GR 1 Location of the page to be freed. GR 2 Location of the PCB (Page Control Block).	
Return Value:	CC=0 Page was freed ok. CC=1 Page was reclaimed; the PDP should release the XA (External address) it has just written the page into. CC=2 Page does not exist anymore; PDP should free the XA and the PCB.	
Error Exit:	The job will be terminated with code SVCE if it is not absolute.	
Description:	If, while the PDP was writing out the page, the user referred to it again, it is reclaimed and the PDP is told (via CC=1) that the copy just written on the drum is no good. If, while the PDP was writing out the page, the user freed it, the PDP is told to throw out the copy on the drum and the PCB for it.	

PDPWAIT (RETIRE)

Supervisor Call Description

Name:	PDPWAIT (RETIRE)	Supervisor Call: 51
Function:	Allow the PDP (Paging Drum Processor) to be deactivated when there is nothing for it to do.	
Properties:	Slow, Privileged	
Calling Sequence:	GR 0 Location at which the PDP should be restarted when there is something else for it to do.	
Return Value:	Doesn't return.	
Error Exit:	The job will be terminated with the code SVCE if it is not absolute.	
Description:	The location given is saved, and when PCB's are placed on the PIQ or RPQ, the job is restarted at that location.	

FREEALL

Supervisor Call Description

Name:	FREEALL	Supervisor Call: 52
Function:	Release all storage attached to a job and make it absolute.	
Properties:	Slow, Privileged	
Calling Sequence:	None.	
Return Value:	None.	
Error Exit:	None.	
Description:	This equivalent to SVC FREEBF issued for all storage attached to the job. The job is then made absolute. This is preparatory to termination of the job. The total CPU time used by the job is added into global accumulators. If the job is relocatable, then all named address spaces attached to the job are detached, as if a NAS SVC with the CLEAR subcode had been issued.	

DEVSTAT

Supervisor Call Description

Name:	DEVSTAT		Supervisor Call: 53
Function:	Obtain the status of a particular device.		
Properties:	Fast, Non-privileged		
Calling Sequence:	GR 0	Logical device number	
Return Value:	GR 1	Switches, as follows:	

bit 9	GTUNIT queued
bit 10	CU end received since last SIO
bit 11	One second wait for fake DE pending
bit 12	Last SVC STIO had GR0 bit 10 (OLTEP) on.
bit 13	HIO (or HSCH) pending.
bits 14-15	Unused.
bit 16	Spurious DE received
bit 17	Subchannel busy
bit 18	CEWAIT issued
bit 19	SIO pending
bit 20	Command retry in progress
bit 21	Select on same path
bit 22	Using restart CAW
bit 23	Take current exit in user mode
bit 24	Sense in progress
bit 25	I/O queue busy (i.e., no new operation to be started)
bit 26	Device busy
bit 27	Proceed bit, i.e., WAIT is outstanding.
bit 28	Wait taken with UE or UC (no SAVE or SAVSKP)
bit 29	CSW or INOP error occurred.
bit 30	Unit check outstanding
bit 31	Unit exception outstanding

GR 2 Flag to use with SVC WAYT to wait for proceed bit to go off.
GR 3 Zero or location of first channel program on the Active I/O queue.
GR 4-5 Current CSW.

Error Exit: The job is terminated with code ILDN if the logical device number in GR0 is bad.

Description: The information is returned from the device table for the device specified. See SVCs GCCWAD (SVC 25), and DEVINFO (SVC 73) also.

PAGINFO

Supervisor Call Description

Name:	PAGINFO		Supervisor Call: 54
Function:	Find out information about a page.		
Properties:	Slow, Non-privileged		
Calling Sequence:	GR 1	Address of any byte within the page.	
Return Value:	CC=0	Illegal address or never referenced	
	CC=1	Page on drum/disk, not in real memory.	
	CC=2	Page in real memory, not on drum/disk	
	CC=3	Page in real memory and either on drum/disk or permanently resident.	
	GR 0	Bit 31	on if the address is legal. This means it may be referenced; this says nothing about whether it may be changed.
		Bit 30	on if a page-in failure has occurred for this page.
Error Exit:	None.		
Description:	The address in GR1 is tested for legality and if it refers to a page in the caller's virtual memory, the status of that page is returned. The status of the page is not affected and it is not referenced.		

PCITRA

Supervisor Call Description

Name:	PCITRA	Supervisor Call: 55
Function:	To obtain the effect of SVC PCISU followed by SVC TRA in one SVC.	
Properties:	Slow, Privileged	
Calling Sequence:	GR 0 Same as for SVC PCISU GR 1 Same as for SVC PCISU GR 2 Same as GR 1 for SVC TRA (restore area) GR 3 Same as GR 0 for SVC TRA (transfer addr)	
Return Value:	Doesn't return.	
Error Exit:	See descriptions of PCISU (SVC 31) and TRA (SVC 40).	
Description:	See descriptions of PCISU (SVC 31) and TRA (SVC 40).	

ATNTRA

Supervisor Call Description

Name:	ATNTRA	Supervisor Call: 56
Function:	To obtain the effect of SVC ATNSU followed by SVC TRA in one SVC.	
Properties:	Slow, Privileged	
Calling Sequence:	GR 0 Same as for SVC ATNSU GR 1 Same as for SVC ATNSU GR 2 Same as GR 1 for SVC TRA (restore area) GR 3 Same as GR 0 for SVC TRA (transfer addr)	
Return Value:	Doesn't return.	
Error Exit:	See descriptions of ATNSU (SVC 29) and TRA (SVC 40).	
Description:	See descriptions of ATNSU (SVC 29) and TRA (SVC 40).	

XITTRA

Supervisor Call Description

Name:	XITTRA	Supervisor Call: 57
Function:	Obtain the effect of SVC ENDXIT followed by SVC TRA in one SVC.	
Properties:	Slow, Privileged	
Calling Sequence:	GR 0 Same as for SVC ENDXIT GR 1 Same as for SVC ENDXIT GR 2 Same as GR 1 for SVC TRA (restore area) GR 3 Same as GR 0 for SVC TRA (transfer addr)	
Return Value:	Doesn't return.	
Error Exit:	See descriptions of ENDXIT (SVC 39) and TRA (SVC 40).	
Description:	See descriptions of ENDXIT (SVC 39) and TRA (SVC 40).	

LOCK

Supervisor Call Description

Name: LOCK Supervisor Call: 58

Function: Set lock byte with supervisor assist so if job goes south the lock will be automatically reset.

Properties: Slow, Privileged

Calling Sequence: GR 0 Lock byte number:

1	Unused
2	VOLGET lock
3	Unused
4	Unused
5	Unused
6	TAPEQ Lock
7	SYSSYMTAB - UMLOAD's system symbol table and ENDSEG2 lock
8	STATJOB lock
9	ICFTABLE - In-core open file table lock
10	CATEXT - Catalog extension lock
11	Unused
12	HASPCAN - Cancel processor lock
13	MOUNT Console lock (unused at UM)
14	CATBUF - Catalog buffer lock for public (*) files
15	SFCAT - Create scratch file descriptor lock
16	unused
17	NASTABLE - MTS Named Address Space table lock
17	Job List - For use by job list manipulation routines.

Return Value: CC=0 always.

Error Exit: If the lock number in GR0 is either illegal or specifies a lock that has already been set by the same job, the job will be terminated with code

SVCE.

Description: If the lock is not set, it is set and return is made. If the specified lock is set by some other job, the job is made to WAYT until it can set the lock. No return is made until the lock is set.

The LOCKSVC macro in COPY:MISC*SAL may be used to load GR0 and issue this SVC.

UNLOCK

Supervisor Call Description

Name:	UNLOCK	Supervisor Call: 59
Function:	Reset lock byte set with SVC LOCK.	
Properties:	Slow, Privileged	
Calling Sequence:	GR 0 Lock byte number. See description of SVC LOCK for list.	
Return Value:	None.	
Error Exit:	If the lock number in GR0 is illegal the job will be terminated with code SVCE.	
Description:	If the specified lock byte is set and has been set by the calling job, the lock byte is reset. Otherwise, the call is ignored. The UNLKSVC macro in COPY:MISC*SAL may be used to load GR0 and issue this SVC.	

CLRLOCK

Supervisor Call Description

Name:	CLRLOCK	Supervisor Call: 60
Function:	Reset all locks for a job.	
Properties:	Slow, Privileged	
Calling Sequence:	None.	
Return Value:	None.	
Error Exit:	None.	
Description:	All locks that have been set (via SVC LOCK) by the calling job are reset.	

MOVEIN

Supervisor Call Description

Name:	MOVEIN	Supervisor Call: 61
Function:	To move information from a relocatable job's virtual memory to absolute memory locations.	
Properties:	Slow, Privileged	
Calling Sequence:	GR 0 Absolute location to move into. GR 1 Relocatable location to move from. GR 2 Number of bytes to move (must be less than 1 page)	
Return Value:	CC=0 Move completed. CC=1 Bad VM address given GR1. CC=2 Page-in failure. CC=3 Bad absolute address given in GR0.	
Error Exit:	None.	
Description:	This is a supervisor-assisted MVC, extended to up to a page per move (and with real, not IBM, lengths). It is needed when a relocatable job cannot address the absolute region it's moving into. If the caller is an absolute job, the "relocatable" address is really absolute.	

MOVEOUT

Supervisor Call Description

Name:	MOVEOUT	Supervisor Call: 62
Function:	To move information into a relocatable job's virtual memory from an absolute memory region.	
Properties:	Slow, Privileged	
Calling Sequence:	Same as for SVC MOVEIN (SVC 61)	
Return Value:	Same as for SVC MOVEIN (SVC 61)	
Error Exit:	None.	
Description:	This is the inverse of SVC MOVEIN.	

HASPHERE

Supervisor Call Description

Name:	HASPHERE	Supervisor Call: 63
Function:	Allow HASP to tell the supervisor it is operational and to pass it parameters.	
Properties:	Slow, Privileged	
Calling Sequence:	GR 0 Location of WSPOOLQ or zero GR 1 Location of $1052EWF if GR0 is not zero GR 2 Location of $POOLECB if GR0 is not zero	
Return Value:	None.	
Error Exit:	The job will be terminated with code SVCE if GR0 is non-zero and a previous call on this SVC with GR0 not equal to zero was made by a task that is still active.	
Description:	If GR0 is non-zero this SVC informs UMMPS that the task is HASP. If GR0 is zero the SVC informs UMMPS that the task is a HASPLING. For HASP the supervisor saves the three locations, and on receipt of a line from the console typewriter beginning with a dollar sign ($), which means a message for HASP, it passes it to HASP as follows: WSPOOLQ is the head of a queue to put messages on. (It is actually N queue heads, where N is the number of CPUs plus one; this is to ensure there will always be one unlocked queue). It consists of a one byte lock and a three byte address. The message is added to this queue, a $POST $1052EWF,WORK is done (this tells the console service processor in HASP to look at its queues), $POOLECB is $POSTed (telling HASP to look at its processors to see if any of them have work to do), and HASP is added to a global CPU queue. For a Haspling the GR1 and GR2 values are ignored.	

SLEEP

Supervisor Call Description

Name:	SLEEP	Supervisor Call: 64
Function:	Same as SVC WAYT (SVC 35) but the job is also taken off the global CPU queues. This is more efficient but requires that the job be explicitly reactivated by an SVC AWAKEN (SVC 65) or that the wayt bits be cleared in an exit routine.	
Properties:	Slow, Non-privileged	
Calling Sequence:	Same as SVC WAYT (SVC 35)	
Return Value:	Same as SVC WAYT (SVC 35)	
Error Exit:	Same as SVC WAYT (SVC 35)	
Description:	This is the same as the SVC WAYT (SVC 35) except that the job is taken off the global CPU queues. This means that as well as the WAYT condition being satisfied, the job must be put back on a global CPU queue with an SVC AWAKEN (SVC 65) or some type of task exit (attention, timer, I/O, SETEXIT, etc.).	

AWAKEN

Supervisor Call Description

Name:	AWAKEN	Supervisor Call: 65
Function:	Rouse a job that is dormant, because it has executed an SVC SLEEP, for example.	
Properties:	Slow, Non-privileged	
Calling Sequence:	GR 0 Job number or the characters "HASP"	
Return Value:	CC=0 Job was awakened. CC=1 There is no job with that job number.	
Error Exit:	None.	
Description:	If GR0 contains a job number, and that job is not on a global CPU queue, it is put back on a global CPU queue. If GR0 contains "HASP" then the HASP job is awakened, and in addition, a $POST is done to $POOLECB.	

MOVEFROM

Supervisor Call Description

Name:	MOVEFROM	Supervisor Call: 66
Function:	To move information from a relocatable job's virtual memory to absolute memory locations.	
Properties:	Slow, Privileged	
Calling Sequence:	GR 0-2 Same as for SVC MOVEIN (SVC 61) GR 3 Job number of the job to move from.	
Return Value:	CC=0 Move was ok. CC=1 Relocatable location was bad, the length was too long, or the job number specified is bad. CC=2 Page-in failure. CC=3 Bad absolute address.	
Error Exit:	None.	
Description:	This is the same as SVC MOVEIN (SVC 61), except that the job being moved from does not have to be the one issuing the SVC.	

MOVETO

Supervisor Call Description

Name:	MOVETO	Supervisor Call: 67
Function:	To move information into a relocatable job's virtual memory.	
Properties:	Slow, Privileged	
Calling Sequence:	Same as for SVC MOVEFROM (SVC 66)	
Return Value:	Same as for SVC MOVEFROM (SVC 66)	
Error Exit:	None.	
Description:	This is the inverse of SVC MOVEFROM.	

CEWAIT

Supervisor Call Description

Name:	CEWAIT		Supervisor Call: 68
Function:	To set things up for a particular device so that SVC WAIT, etc., will wait for channel end rather than device end.		
Properties:	Slow, Privileged		
Calling Sequence:	GR 0	bit 0	0->enable, 1->disable
		bits 16->31	logical device number
Return Value:	None.		
Error Exit:	The job will be terminated with code SVCE if the device is not idle, and with code ILDN if the logical device number is bad.		
Description:	This SVC causes a flag to be set in the device tables so the I/O operation is deemed completed (for purposes of SVC WAIT, etc.,) when a channel end interrupt comes in, rather than waiting for a device end interrupt.		

BINTIME

Supervisor Call Description

Name:	BINTIME	Supervisor Call: 69
Function:	Return the time of day in "Julian" microseconds.	
Properties:	Fast, Non-privileged	
Calling Sequence:	None.	
Return Value:	GR 0 and GR 1 contain a double-precision (8 byte) integer which is the number of microseconds since midnight, March 1, 1900.	
Error Exit:	None.	
Description:	See SVCs TOD (SVC 28), GETELT (SVC 38), GETELT2 (SVC 81) and TIMERU (SVC 141) also.	

SYSTEM

Supervisor Call Description

Name:	SYSTEM	Supervisor Call: 70
Function:	To place the current job in system (unprotected) mode.	
Properties:	Fast (see below), Non-privileged	
Calling Sequence:	None.	
Return Value:	CC=0 Job was already in system mode. CC=1 Job was in user mode. GR 1 Address of the save area given in SVC SYSSU.	
Error Exit:	The job will be terminated with code SVCE if SVC SYSTEM is not issued from within the "gate" defined by a previous SVC SYSSU.	
Description:	SVC SYSTEM resets the user mode bits in the current local CPU queue entry and JOB TABLE and puts the system segment back into the segment table. GR0, GR1, and GR2 are saved in the save area defined in the most recent SVC SYSSU. The address of this save area is returned in GR1. SVC TRAX may be used to return a job to user mode. SVC SYSTEM must be preceeded by an SVC SYSSU. This SVC may be "slow" rather than "fast" if the save area address specified in the most recent SVC SYSSU is unavailable and the supervisor subroutine TRANS must be called. This SVC is obsolete. Its use has been replaced with a monitor call instruction as part of the 'distributed gate.'	

TRAX

Supervisor Call Description

Name:	TRAX	Supervisor Call: 71

Function: To perform the function of an SVC TRA with additional options to conditionally perform the function of an SVC DAT and to change from system to user mode.

Properties: Fast (see below), Privileged

Calling Sequence:

GR 0	Right hand half of a PSW.	
GR 1	Location of a register save area.	
GR 2	bits 0-23	unused (should be zero).
	bit 24	on -> Enable user->system MC trapping.
	bit 25	on -> Task may use vectors.
	bit 26	on -> transfer in system mode.
	bit 27	on -> allow time slice end.
	bit 28	on -> delay time slice end.
	bit 29	on -> no transfer, just switch modes.
	bit 30	on -> do the DAT function also.
	bit 31	on -> switch to user mode.
GR 3	If GR2 bit 24 or 30 is on, a pointer to a parameter area or zero.	

Return Value: None.

Error Exit: The job will be terminated with code SVCE if GR2 bit 30 is set and the address in GR3 is not full-word aligned or if GR2 bit 30 is set and the SVC is issued in non-privileged user mode and there is more than one entry on the task's local CPU queue or if the register save area specified by GR1 crosses a page boundary.

Description: SVC TRAX with no GR2 bits set performs just the function of SVC TRA. If some GR2 bits are set and GR2 bit 29 is not set the function of SVC TRA is performed after all other requested options have been processed. If GR2 bit 29 is set the SVC TRA functions are skipped (GR0 and GR1 are ignored). If GR2 bit 30 is set the functions of an SVC DAT are performed. If GR2 bit 31 is set the user mode bits in the

current local CPU queue entry and JOB TABLE are set and one or more memory segments may be removed from the tasks's segment table (see DEFDOM, SVC 91). If GR2 bit 28 is set time slice end will be delayed for one additional time slice. Setting bit 27 causes any time slice delay to be canceled. If bits 27 and 28 are both set any time slice delay is canceled and bit 28 is ignored.

The options provided by bits 27 and 28 are used by MTS when the accounting files are accessed to prevent the job from coming to time slice end with an accounting file locked. Time slice end is also delayed for jobs that have a supervisor lock set or a disk page or volume locked, but these delays are accomplished completely within the supervisor rather than by having the job issue an SVC TRAX.

The option provided by bit 25 is used by MTS to improve efficiency for jobs using the vector facility. Currently only the EXEC CLS ever executes any vector instructions; by specifying "no vector usage" when switching CLSes, MTS allows UMMPS to avoid saving and restoring the vector registers. Specifying bit 24 as one tells UMMPS that the job may use vectors; the supervisor then makes decisions about saving/restoring the vector registers based upon the job's recent activity.

Bit 24 allows an exit to be taken upon the next user -> system domain monitor call. The exit is set up using the DAT exit area; at the time of the exit, processing is identical to a DAT exit, except that the exit code is MCAL.

FAKEIO

Supervisor Call Description

Name:	FAKEIO	Supervisor Call: 72
Function:	Pretend an I/O interrupt happened.	
Properties:	Slow, Privileged	
Calling Sequence:	GR 0 Physical device address in bits 20-31. GR 1-2 CSW (/370 mode) or GR 1-3 SCSW (XA mode)	
Return Value:	None.	
Error Exit:	None.	
Description:	After this SVC it is assumed that the specified CSW was stored with an I/O interrupt on the specified unit address.	

DEVINFO

Supervisor Call Description

Name: DEVINFO Supervisor Call: 73

Function: Returns the status of an I/O device to the task.

Properties: Slow, Privileged

Calling Sequence: GR 0 bits:

0	Do a SAVE first.	
1	Return CSW (8 bytes)	
2	Return CAW from first entry on saved queue (4 bytes)	
3	Return returns list address from first entry on saved queue (4 bytes)	
4	Return current attention exit (4 bytes)	
5	Return current PCI exit (4 bytes)	
6	Return Device ID (4 bytes)	
7	Return last path used (2 bytes)	
8	Return residual count (not from CSW) (2 bytes)	
9	Return halfword of bits (2 bytes):	
	0	Last operation used software command chaining
	1	GTUNIT queued for this device
	2	Device attached to block multiplexor channels only
	3	Inop device
	4	Initial rejection
	5	Immediate operation
	6-7	Unused
	8-14	CAW key from saved first entry
	12-15	Unused
10	Return OLTEP information (14 bytes):	

		Condition Code from first SIO Status from first SIO Condition Code from second SIO (always zero) Status from second SIO (always zero) First CSW received for last operation
	11	Return Device Type (4 bytes)
	12	Return subchannel information block (48 bytes)
	13-14	Unused
	15	Return sense data (8 or 26 bytes)
	16-31	Logical device number
GR 1	Address of region to receive information	

Return Value:

CC=0	Information is returned in area pointed to by GR 1, in the order listed above, without gaps. Registers remain unchanged.
CC=1	LDN is not in use.

Error Exit: Job will be terminated with code SVCE if the area pointed to by GR 1 is not addressable. The job will be terminated with code ILDN if the logical device number contained in GR0 bits 16-31 is invalid.

Description: There is little more to say. See SVCs GETID (SVC 20), GCCWAD (SVC 25), DEVSTAT (SVC 53), and GETSNS (SVC 74) also.

GETSNS

Supervisor Call Description

Name:	GETSNS	Supervisor Call: 74
Function:	Obtain the last sense data for a device.	
Properties:	Fast, Privileged	
Calling Sequence:	GR 0 Logical device number	
Return Value:	GR0 and GR1 contain, left justified: one byte count of what follows one byte sense flag (see the SNSADR SVC for a description) up to six bytes of sense data	
Error Exit:	The job will be terminated with code ILDN if the logical device number in GR0 is bad.	
Description:	The last sense data from the device, which is kept in the device table, is returned. If more than 6 bytes are available only the first 6 are returned. See SVCs DEVINFO (SVC 73) and SNSADR (SVC 19) also.	

TIMEDIFF

Supervisor Call Description

Name:	TIMEDIFF	Supervisor Call: 75
Function:	Obsolete. The task will be terminated with code SVCE.	

OPERSU

Supervisor Call Description

Name:	OPERSU	Supervisor Call: 76
Function:	To establish the current job as the OPERATOR job.	
Properties:	Slow, Privileged	
Calling Sequence:	GR 0 zero or a pointer to the exit area for the OPERATOR job.	
Return Value:	None.	
Error Exit:	The job will be terminated with code SVCE if an OPERATOR job is already active.	
Description:	This SVC must proceed the first use of the OPERQS SVC and serves to establish the current task as the OPERATOR job, unless GR0 is zero. When an OPERATOR job exists and is active, requests to read from or write to the system console via SVC READ and SVC WRITE are passed from the supervisor to the OPERATOR job. If no OPERATOR job is active or if GR0 is zero when SVC OPERSU is issued then the supervisor handles I/O to the system console. Note: This SVC and SVC OPERQS are invalid if the supervisor has been assembled with the SETB symbol &OPERJOB in COPY:GLOBALS set to 0.	

OPERQS

Supervisor Call Description

Name: OPERQS Supervisor Call: 77

Function: To allow messages to be transfered between the OPERATOR job and the supervisor.

Properties: Slow, Privileged

Calling Sequence:

GR 0 the length of the message text being returned, or -2 if the read was canceled, or -1 if no message is being returned.

GR 1 the task number to which the message is being returned if GR0 is positive or equal to -2.

GR 2 if GR0 is positive, the address of the first byte of the message text being returned; if GR0 is equal to -1, the address of a 100 character buffer into which the supervisor may place a message.

Return Value: If the SVC is issued with GR0 set to -1 then:

GR 0	the length of the message returned (if any).
GR 1	the task number associated with the message.
	The message itself will have been moved into the buffer pointed to by GR2 when the SVC was issued.
CC=0	Message returned is to be written.
CC=1	Message returned is a read request.
CC=3	No message returned.

Error Exit: The job will be terminated with code SVCE if any part of the message buffer is not addressable, GR0 is equal to -2 or positive and the job number in GR1 is not equal to the job number of a job with an outstanding read request, the SVC is issued from a job other than the OPERATOR job or the SVC has not been proceeded by the OPERSU SVC.

Description: You should be able to figure it out from the information given above.

TIMER

Supervisor Call Description

Name:	TIMER		Supervisor Call: 78
Function:	Set up a timer wait or exit for a job.		
Properties:	Slow, Non-privileged (see below)		
Calling Sequence:	GR 0	bit 26	1 -> if bits 30 and 31 are set the time specified is IBM GMT, i.e., TOD clock value shifted right by 12 bits (the TOD clock is based on midnight, January 1, 1900 GMT).
		bit 27	1 -> restore GR0 through GR3 only (if bit 28 is 1). 0 -> restore all general registers.
		bit 28	1 -> Do a POPQ after setting up the exit (if bit 29 is 0). 0 -> Return to the instruction after the SVC.
		bit 29	0 -> EXIT, 1 -> WAIT
		bit 30	0 -> relative, 1 -> absolute
		bit 31	0 -> task time, 1 -> real time
	GR 1-2	Expiration time, in microseconds	
	GR 3	Address of exit area, if GR0 bit 29 = 0	
Return Value:	None.		
Error Exit:	If GR0 bit 28 is one, bit 29 is zero, and the exit area is not addressible, or not full-word aligned the job will be terminated with code SVCE. If the exit area is not addressible the job will be terminated with PGNT 5. If this SVC is issued from non-privileged user mode with GR0 bits 27 or 28 set or with bits 29 or 31 not set the job will be terminated with code SVCE.		
Description:	An expiration time is specified by GR0 bits 30 and 31, and the double precision quantity in GR1, GR2. This quantity is either relative to the time of the SVC, or relative to zero, where zero is midnight, March 1,		

1900, for real time, and the time the job was started, for task time.

If WAIT is specified, the job is placed in wait state until the expiration time. This wait condition may be cleared, in an exit routine, by SVC RSTTWAYT (SVC 137) or SVC FLUSH (SVC 33).

If EXIT is specified, control is returned immediately to the instruction following the SVC, and a task exit is taken at the expiration time. When the exit occurs, control is transferred to the location specified in word 1 of the exit area, and the remainder of the exit area will be set up as follows:

WORDS 2-3:	PSW at time of exit
WORDS 4-6:	GR0,1,2 at time of exit

Also, GR1 will contain the address of the exit area, and GR2 will contain the second word of the job's previous local CPU queue entry, which is pushed down, and a new local CPU queue entry is constructed using word 1 of the exit area as the right half PSW.

To prevent the possible occurrence of an exit between the SVC TIMER and an SVC POPQ to return from a previous exit, GR0 bit 28 may specify a POPQ to follow the SVC TIMER. In this case, control is returned to the previous local CPU queue entry, and the registers are restored from words 4-19 of the exit area before the next interrupt occurs, no matter how short the interval. See SVC TWAYT (SVC 128) also.

TIMECNCL

Supervisor Call Description

Name:	TIMECNCL	Supervisor Call: 79
Function:	To cancel timer exits set up by SVC TIMER.	
Properties:	Slow, Privileged	
Calling Sequence:	GR 0	Exit area address for the exit to be cancelled, or zero, in which case all timer exits and waits are cancelled.
Return Value:	CC=0 CC=1 GR0,1	OK Exit not found Remaining time in microseconds if cancelling only one exit.
Error Exit:	None.	
Description:	The specified exit is cancelled, if it has not occurred before the execution of SVC TIMECNCL. If GR0 is zero, all timer events for this job are cancelled, including TWAYT's.	

RELOC

Supervisor Call Description

Name:	RELOC	Supervisor Call: 80
Function:	To switch a job into relocatable mode.	
Properties:	Slow, Privileged	
Calling Sequence:	None.	
Return Value:	None.	
Error Exit:	None.	
Description:	This SVC simply sets the relocatable bit in the current job table entry and returns.	

GETELT2

Supervisor Call Description

Name:	GETELT2	Supervisor Call: 81
Function:	Obtain supervisor and problem state times in 370 timer units. See also BINTIM (SVC 69), TOD (SVC 28), GETELT (SVC 38), and TIMERU (SVC 141) for the time in different units.	
Properties:	Fast, Non-privileged	
Calling Sequence:	None.	
Return Value:	GR 0-1 Problem state CPU time GR 2-3 Supervisor state CPU time	
Error Exit:	None.	
Description:	The values returned are the problem and supervisor CPU time charged to the calling job in timer units. This is the time since the job was initiated. The units used are microseconds times 4096.	

GETSCAN

Supervisor Call Description

Name:	GETSCAN	Supervisor Call: 82
Function:	To return scan pages from the AMDAHL 470 Console Processor.	
Properties:	Slow, Privileged	
Calling Sequence:	GR 0	zero if first page, one if not first page, two for log keys.
	GR 1	Address of buffer to hold returned information, 48 bytes for V6 log keys, 72 bytes for V7/V8 log keys (currently only the first 48 bytes contain valid data, the remaining bytes are zeros), otherwise enough space for one scan page.
	GR 2-3	Key of logout requested.
	GR 4	Number of first scan page if GR0 is zero.
Return Value:	CC=0	Operation complete, the output returned is stored in the area pointed to by GR1.
	CC=1	SVC issued from a non/470 CPU.
	CC=2	Error, GR0 is unchanged if GR1 specified an invalid return area and is set to zero if the original GR0 code was invalid.
	With both CC=0 and CC=2 GR0 and GR1 contain the second and third words of the parameter list (CPS Flags and bytes transfered).	
Error Exit:	None.	
Description:	This SVC causes a diagnose instruction to be executed. The diagnose instruction will have the form X'83EBi000' which will invoke the AMDAHL CPS "EB" function. For more information see "Diagnose 'EB' Functions User's Guide", P/N 804103/700, "Diagnose 'EB' Functions Specification", P/N 804103/600, and "Console System Subroutine Summary Specification", P/N 804125/600.	

CLRIO

Supervisor Call Description

Name:	CLRIO	Supervisor Call: 83
Function:	Clear an I/O path using the CLRIO machine instruction.	
Properties:	Slow, Privileged	
Calling Sequence:	GR 0	Path address of path to be cleared.
Return Value:	CC=0	operation completed.
	CC=1	operation failed because the subchannel on this path was busy with another device.
Error Exit:	None.	
Description:	A CLRIO instruction is issued.	

SYSSU

Supervisor Call Description

Name:	SYSSU	Supervisor Call: 84
Function:	To setup for future calls via SVC SYSTEM (ENTER) or the System monitor call.	
Properties:	Slow, Privileged	
Calling Sequence:	GR 0 Pointer to a 3 word save area. GR 1 Lower address of "gate". GR 2 Upper address of "gate".	
Return Value:	None.	
Error Exit:	The job is terminated with code SVCE if GR1 is zero or the three word save area specified by GR0 crosses a page boundry, or is not addressable, or if the total number of different "gates" established for all jobs exceeds ten.	
Description:	To be legal an SVC SYSTEM must follow an SVC SYSSU and must also be executed from within the "gate" defined by GR0 and GR1 in the most recent SVC SYSSU. The save area specified by GR0 is used to save GR0, GR1, and GR2 after an SVC SYSTEM. The lower address of the "gate" is assumed to point to a vector of addresses, preceded by a count, to be used for the System monitor call. The address portion of the monitor call instruction is used as an index into this vector to obtain the system domain entry point.	

INTERTSK

Supervisor Call Description

Name:	INTERTSK	Supervisor Call: 85
Function:	To provide an interface to the UBC intertask communication facility.	
Properties:	Slow, Privileged	
Calling Sequence:	For detailed information on the use of this SVC see the separate intertask writeup. This SVC always requires an "op-code" in bits 0-7 of GR0. Depending on the op-code it may also require flags in bits 8-15, and a length in bits 16-31 of GR0 and other parameters in GRs 1, 2, and 3.	
Return Value:	CC=0	everything was OK.
	CC=1	unused.
	CC=2	error external to calling task.
	CC=3	error internal to calling task (bad parameters).
	GR1	a return code. For more detailed information see the separate intertask writeup.
Error Exit:	See the separate intertask writeup for details.	
Description:	This SVC provides a means of communication between programs running in separate tasks. See the separate writeup (in the file UMPS:INTERTSK*WP at UM) for a complete description.	

MCHK

Supervisor Call Description

Name:	MCHK	Supervisor Call: 86
Function:	To enable or disable machine check soft recording.	
Properties:	Slow, Privileged	
Calling Sequence:	GR 0 0->disable, 1->enable, 2->snoop. GR 1 If GR0 = 1, number of soft checks to record before automatically disabling soft recording.	
Return Value:	If GR0 = 2 then: GR 0 Number of Soft Checks that have occurred GR 1 Current Limit	
Error Exit:	SVCE error if GR0 is not equal to zero, one or two.	
Description:	There is little more that needs to be said, except that this was SVC 85 (X'55') and was changed to be SVC 86 because of a conflict in the assignment of SVC numbers by UM and UBC.	

SETPSWK

Supervisor Call Description

Name:	SETPSWK		Supervisor Call: 87
Function:	Set the PSW key to be used by the calling task.		
Properties:	Fast, Privileged		
Calling Sequence:	GR 0	bits 28-31	zero
		bits 24-27	key to use
		bits 0-23	zero
Return Value:	GR0	previous key in bits 24-27	
Error Exit:			

Description:

The PSW key specified in GR0 will be used by the calling task whenever memory protection is on, as determined by SVC PROTON and SVC PROOFF.

Currently most job programs use key one, HASP uses key two, and the disk manager uses key three.

DISKIO

Supervisor Call Description

Name:	DISKIO		Supervisor Call: 88
Function:	To allow an UMMPS task to request disk operations be performed by the disk manager (DMGR).		
Properties:	Slow, privileged		
Calling Sequence:	GR 0	bits 0-4	unused (should be zero).
		bit 5	on -> perform synchronous wait.
		bits 6-7	unused (should be zero).
		bit 8	on -> set up asynchronous exit.
		bits 9-15	unused (should be zero).
		bits 16-31	number of requests
	GR 1	address of a region containing one or more requests in a contiguous block.	
	GR 2	address of an exit parameter area for an asynchronous exit	
Return Value:	If bits 5 and 8 of GR0 are off, return is not made until the requested disk operations have been completed, and the task will not be dispatched for any reason until the SVC completes. If bit 5 of GR0 is on, the task will WAYT until the disk operations have been completed, and may be dispatched if any outstanding exits (e.g., timer, intertask, etc.) are taken. If bit 8 of GR0 is on, return is made immediately and the task continues execution; when the disk operations have been completed, an asynchrounous exit is taken and the task is restarted at the address specified in the first word of the exit area, with the task's registers and the exit area set up if for an ENDXIT exit (see the ENDXIT SVC).		
Error Exit:	The task is terminated with error code SVCE if the request count is greater than 256, if the requests are not full-word aligned or not addressable, if any invalid option bits are on, or if both bits 5 and 8 in GR0 are on.		
Description:	This SVC allows a task to pass requests to the disk manager. Each request is four words long. See COPY:DMGR*SAL for additional		

information on disk manager requests.

DMGRPOST

Supervisor Call Description

Name:	DMGRPOST	Supervisor Call: 89
Function:	To allow the disk manager to give queues to UMMPS.	
Properties:	Slow, privileged	
Calling Sequence:	GR 0 queue of requests which have been finished by the disk manager or zero if there are no finished requests to post GR 1 queue of requests which need to have pages nailed down or zero if no requests need pages nailed down	
Return Value:	None.	
Error Exit:	The task is terminated with an error code SVCE if the task is not the disk manager or if the completed queue contains an invalid DRCB.	
Description:	This SVC allows the disk manager to tell UMMPS that requests are done. It also allows the disk manager to ask UMMPS to lock pages in memory which will be required in future disk operations. All of the entries on the two queues are DRCBs (see COPY:DMGR*SAL).	

DMGRHERE

Supervisor Call Description

Name:	DMGRHERE	Supervisor Call: 90
Function:	To inform UMMPS that the calling task is the disk manager and to get back the locations used for communication between the disk manager and UMMPS.	
Properties:	Slow, privileged	
Calling Sequence:	GR 0	byte the disk manager will SLEEP on when there are no dispatchable subtasks
Return Value:	CC=0	OK
	CC=1	Error, there is already an active disk manager.
	GR 0	queue head for queue of new requests
	GR 1	queue head for queue of requests which now have their pages locked (nailed) in memory
	GR 2	first request (not the head location) of the chain of partially finished requests left from the last incarnation of the disk manager or zero if this is the first incarnation
Error Exit:	The job is terminated with code SVCE if this SVC is issued from a relocatable job.	
Description:	This SVC is to be used when the disk manager starts up.	

DEFDOM

Supervisor Call Description

Name:	DEFDOM	Supervisor Call: 91
Function:	To define the user domain attributes.	
Properties:	Fast, privileged	
Calling Sequence:	GR 0 16 bit user domain segment map in bits 16-31. GR 1 domain attributes: bit 31: 1 -> user domain can issue privileged SVCs 0 -> user domain cannot issue privileged SVCs.	
Return Value:	None.	
Error Exit:	None.	
Description:	The low order 16 bits of GR0 are used as a segment map for the user domain segment table. A one corresponds to "segment available" and a zero corresponds to "segment not available". Bit 16 in GR0 corresponds to segment F and bit 31 in GR0 corresponds to segment 0.	

DSXITSU

Supervisor Call Description

Name:	DSXITSU	Supervisor Call: 92
Function:	To trap domain switches.	
Properties:	Fast, privileged	
Calling Sequence:	GR 0 bits indicating which direction to trap domain changes: bit 31: 1 -> trap system -> user bit 30: 1 -> trap user -> system GR 1 address of exit area or zero	
Return Value:	None.	
Error Exit:	The job is terminated with code SVCE if the exit area is unaddressable or protected.	
Description:	A domain-switch exit is enabled for the specified domain switch. If both bits 30 and 31 in GR0 are on, then any domain change will cause the exit to be taken. If both bits are off, or the exit area address is zero, the exit is reset. The exit is taken in system domain. The state of the task when the exit is taken is what it was on the user domain side of the domain change. That is, for a domain switch from user to system mode, the exit occurs before the instruction that would have caused the domain switch; while on switches from system to user mode, the exit is taken after the domain switch has been completed, but before the first instruction has been executed in user mode. When an exit occurs an entry is added to the top of the job's local CPU queue with the low order four bytes of the new PSW obtained from the first word of the exit area. In addition, the code "DMSW" is stored in word 2 of the exit area, the job's PSW at the time of the exit is stored in words 3 and 4 of the exit area, and the job's GR0, GR1, and GR2 values at the time of the exit are moved into words 5 to 7 of the exit area. Finally GR1 is loaded with the address of the exit area, GR0 is loaded with the interrupt location, and GR2 is loaded with the second word of the jobs local CPU queue entry.	

TASKINFO

Supervisor Call Description

Name:	TASKINFO			Supervisor Call: 93
Function:	Return information about a task's job table, CPU queue entries, or WAYT queue entries.			
Properties:	Fast (see below), Non-privileged			
Calling Sequence:	GR 0	bits 0-7	Function code requested item:	
			0	Job table address
			1	CPU queue entry
			2	Wayt queue entry
			3	Vector Activity Counter
		bits 8-31	Task number (zero for current task)	
	GR 1	Depends upon option code:		
		0	not used	
		1	Depth of CPU queue entry (0 = current entry)	
		2	Depth of corresponding CPU queue entry (0 = current entry)	
		3	(Unused)	
Return Value:	CC=0	Information returned OK		
	CC=1	Information not available		
	CC=2	Specified task not found		
	GR 0-4	Depends upon option code:		
		0	GR 0	Job table pointer
		1	GR 0	AL1(RJBCQLEN, key, RCQBITS, 0)
			GR 1-2	PSW
			GR 3	AL1(0, ILC, 0, 0)
		2	GR 0	CPU queue entry address
			GR 1	AL1(RWQBITS,Wayt mask, 0, 0)
			GR 2	Address of wayt byte
		3	GR0-1	Vector Activity Counter

Error Exit: None.

Description: If information is requested about the calling task, this SVC is a fast SVC; if information is requested about another task, this SVC is slow. In addition, performance is optimized for the case of a call with GR0 equal to zero (a request for the job table of the calling task).

Consult the definitions of the RCQSECT and RWQSECT copy sections in the macro library COPY:SECTIONS*SAL for additional information on the fields returned.

MSSFCALL

Supervisor Call Description

Name:	MSSFCALL	Supervisor Call: 94
Function:	Issue a Service Call or an MSSFCALL DIAGNOSE call	
Properties:	Slow, Privileged	
Calling Sequence:	GR 0 Parameter block GR 1 Command code	
Return Value:	CC=0 all ok (returns after an external interrupt) CC=1 The MSSF facility is in use by another task CC=2 The MSSF facility is busy (this should never happen) CC=3 No MSSF facility available on this CPU.	
Error Exit:	The job will be terminated with SVCE if the parameter area is not addressible.	
Description:		

SETCONS

Supervisor Call Description

Name:	SETCONS	Supervisor Call: 95
Function:	Select a device for CONSIO to use or make sure that the CONSOLE support knows that CONSIO has been active.	
Properties:	Slow, Privileged>	
Calling Sequence:	GR 0 Path to CONSIO device or -1 GR 1 Height of CRT device (1 for a TTY device) GR 2 Width of CRT or TTY device	
Return Value:	none	
Error Exit:	The job will be terminated with SVCE if the caller is not the current OPERATOR job.	
Description:	If GR0 is equal to -1, the console support routines simply check to see whether there is anything to pick out of CONSIO's conversation buffer. If GR0 specifies an I/O device path, CONSIO is set up to use the specified device path and to keep a conversation buffer based upon the height and width of the new device. The parameters in GR1 and GR2 need be specified only if GR0 is not equal to -1.	

OPERLOG

Supervisor Call Description

Name:	OPERLOG	Supervisor Call: 96
Function:	Post a line to the console log buffer (so that other tasks can monitor the traffic across the OPERATOR console).	
Properties:	Slow, Privileged	
Calling Sequence:	GR 0 Length of line to be posted GR 1 Address of first byte in the line	
Return Value:	None.	
Error Exit:	The job will be terminated with code SVCE if the caller is not the OPERATOR job, if the message is not addressable, or if the message is longer than 100 characters.	
Description:	The specified line is posted to the console buffer. Any tasks waiting for the contents of the buffer to change (via SVC OPERMON) will be restarted.	

OPERMON

Supervisor Call Description

Name:	OPERMON	Supervisor Call: 97
Function:	Obtain the contents of the console log buffer, optionally after waiting for the buffer contents to change.	
Properties:	Slow, Privileged	
Calling Sequence:	GR 0 Buffer length GR 1 Buffer address GR 2 Message number or zero	
Return Value:	GR 0 Length of message returned GR 2 Number of message returned A copy of the current log message is returned in the specified area.	
Error Exit:	The job is terminated with code SVCE if the caller does not have store access to the specified area.	
Description:	If GR2 is zero, the current contents of the console log buffer is returned. If GR2 is nonzero, the task will WAYT until the buffer message number does not equal the contents of GR2. The buffer message number is incremented each time a message is posted to the console log buffer by the OPERLOG SVC. If the message is longer than the maximum length of the caller's buffer, the message will be truncated and no indication will be returned to the user. The maximum length of a message in the buffer is 100 bytes.	

CPUINFO

Supervisor Call Description

Name:	CPUINFO		Supervisor Call: 98
Function:	Obtain information about the CPU-specific information in an MP environment.		
Properties:	Slow, Privileged		
Calling Sequence:	GR 0	0:	Return CPU time charged to DUMJOB.
		1:	Return real core usage stats.
Return Value:	Depends upon function code.		
	0:	GR0-1:	Total overhead problem time
		GR2-3:	Total overhead CPU time
	1:	GR0:	Number of free pages
		GR1:	Number of page frames in use
		GR2:	Number of supervisor pages in use
		GR3:	Number of bad pages
Error Exit:	The job is terminated with code SVCE if GR0 does not contain zero or one.		
Description:	Information about the machine configuration and the supervisor's use of it is summed accross CPUs (if necessary) and returned.		

XSPAGE

Supervisor Call Description

Name:	XSPAGE		Supervisor Call: 99
Function:	Move pages between real and expanded storage.		
Properties:	Fast, Privileged		
Calling Sequence:	GR 0	0:	Page in (to real core) request
		1:	Page out (to expanded storage)
	GR 1	Page address	
Return Value:	CC=0	Success	
	CC=1	Expanded storage data error	
	CC=3	Expanded storage block not available	
Error Exit:	The job is terminated with code SVCE GR0 does not equal zero or one, if the page address is not page aligned, if the page buffer is beyond the end of real core (for absolute jobs) or if the page buffer is an illegal virtual address (for relocatable jobs).		
Description:	A PGIN or PGOUT instruction is issued for the appropriate real page and expanded storage block, and the result is returned to the caller.		

IOINFO

Supervisor Call Description

Name:	IOINFO	Supervisor Call: 100
Function:	Obtain information about the hardware I/O configuration.	
Properties:	Slow, Privileged	
Calling Sequence:	GR 0 0: Return SCHIB GR 1 Device name GR 2 Address of buffer for SCHIB	
Return Value:	GR 0-3 The SCHIB for the specified device is returned into the indicated memory location.	
Error Exit:	The job is terminated with code SVCE if GR0 does not equal zero or if the buffer is not aligned or not accessible.	
Description:	The subchannel information block for the specified device is returned.	

TWAIT (TWAYT)

Supervisor Call Description

Name:	TWAIT (TWAYT)	Supervisor Call: 128
Function:	Cause the task to wait for an interval of real time.	
Properties:	Slow, Non-privileged	
Calling Sequence:	GR 0 Interval to wait, in 300ths of a second.	
Return Value:	CC=0 Successful return after interval has elapsed. CC=1 GR 0 was negative.	
Error Exit:	None.	
Description:	Return from the SVC is not made until after the real-time interval has elapsed. Same as SVC TIMER (SVC 78) with GR0 = 5 and appropriate interval in GR1, 2.	

GETSEG

Supervisor Call Description

Name:	GETSEG		Supervisor Call: 129
Function:	Allow relocatable jobs to obtain a region of storage in a specific segment.		
Properties:	Slow, Privileged		
Calling Sequence:	GR 0	bits 0-15	Maximum segment number * 256
		bits 16-31	Starting segment number * 256
	GR 1	Size of region requested (in bytes)	
Return Value:	CC=0	Storage was allocated	
	CC=1	Invalid segment requested -- or - Starting segment is an active named address space not owned by the calling task -- or - Size of request would cause the allocation to overlap between either two or more active NASes or between one or more NASes and the task's private storage.	
	CC=2	Space of that size not available starting in the specified segment.	
	GR 1	Location of first byte of region.	
	The first word of the region n will contain the length of the region		
Error Exit:	The job will be terminated with code SVCE if it is not relocatable.		
Description:	This is the same as SVC GTBUF (SVC 23) except that GR0 contains the segment number times 256. The number of bytes requested will be rounded up to the nearest page, and the requested number of contiguous pages will be returned. At least one page will be allocated in the specified starting segment, and the allocation will not extend past the last page in the specified maximum segment. As long as these constrains are met, the allocation may span one or more segment boundaries.		

If the task has one or more named address spaces attached and active, the allocation may not overlap between NASes or between a NAS and private memory. In addition, the task may allocate space only within NASes which it owns. See the NAS writeup for further information.

WRD

Supervisor Call Description

Name:	WRD	Supervisor Call: 130
Function:	Provide access to the write direct (WRD) instruction.	
Properties:	Fast, Privileged	
Calling Sequence:	GR 0	Four character WRD line id (e.g., 'BLUE' for blue light) or zero
	GR 1	0->turn line 'off', 1->turn line 'on'
Return Value:	CC=0	OK; line is off
	CC=1	OK; line is on
	CC=2	Error; line in used by another task
	CC=3	Unknown line id
Error Exit:	The job will be terminated with code SVCE if GR1 is not equal to zero or one or if GR1 is equal to one and GR0 is equal to zero.	
Description:	Each time the SVC is issued for a given line with GR1->1 a use count associated with the line is incremented. Each time the SVC is issued for a given line with GR1->0 the use count is decremented. A WRD is issued for a given line whenever the use count for that line goes from zero to one or from one to zero. A task is considered to "own" a WRD line whenever the use count is not zero. If this SVC is executed with both GR0 and GR1 equal to zero all WRD lines owned by the task are released. This SVC is not supported when running under the XA/370 architecture.	

SWPTRA

Supervisor Call Description

Name:	SWPTRA Supervisor Call: 131
Function:	To allow the simulation of running in a 370 with address translation turned off.
Properties:	Slow, Non-privileged
Calling Sequence:	GR 0-1 Same as for SVC TRA (SVC 40) GR 2 Pointer to parameter area as specified in SVC SETXIT (SVC 36). GR 3 bits 24-27 PSW key to use.
Return Value:	Doesn't return.
Error Exit:	The job will be terminated with code SVCE if the address in GR2 is not addressable or not on a fullword boundary, if SVC SWPTRA is issued before previous calls to SVC SWPTRA, SVC DAT and SVC TRAX in DAT mode have returned, or if the task is in non-privileged user mode and there is more than one level on the task's local CPU queue. An error code SVCE will also be returned if a previous SVC VMN was done specifying a non-zero prefix id. In this case, SVC SWPTRAEC should be used.
Description:	When this SVC is issued the following happens: 1. The job's segment tables are changed so that the former virtual machine segments become the first segments, and all other segments are detached. 2. Storage keys are switched as specified by SVC SETSTK unless the PSW key to be used is zero. 3. An SVC TRA is done using the values supplied in GR0 and GR1. The PSW key will be as specified in GR3. 4. The next time this job gets an SVC interrupt or program interrupt,

the segments are switched back the way they were, and control is passed to the job as specified in the GR2 parameter area. See the description of SVC SETXIT (SVC 36).

5. Any other interrupt for this job causes the segment 0 mode to be saved and then turned off so that if the interrupt routine does a POPQ (or similar SVC) it will be restored.

SETSTKEY (SETSTK)

Supervisor Call Description

Name:	SETSTKEY (SETSTK)	Supervisor Call: 132
Function:	Set storage keys.	
Properties:	Slow, Privileged	
Calling Sequence:	GR 0 Storage key in bits 24-30 of the register. bit 23 1 -> always use the key given. GR 1 Half-page or page address (see below)	
Return Value:	None.	
Error Exit:	The job will be terminated with code SVCE if the job is not relocatable, or GR1 contains an invalid address.	
Description:	This sets virtual storage keys, that is, it sets a key on a half-page of virtual memory, rather than a half-page of real memory. The key is specified in GR0 the same as it would be specified for a SSK instruction. The storage keys in the corresponding real page (when it is in memory) will be set only when the job is in virtual machine mode (i.e. after SVC SWPTRA (SVC 132) or SWPTRAEC (SVC 139)), unless GR0 bit 23 is on. Attempts to set storage keys for shared VM pages and absolute pages (segment 0) are allowed. Most private VM pages have key one, shared pages normally have key zero, most VM pages used by HASP have key two, and disk manager pages have key three. If the global SETB symbol &KEY4K is set in COPY:GLOBALDEFS, or if the system is running under the XA/370 architecture, the supervisor will protect storage on a page basis. If the global symbol is off, and the system is operating under the S/370 architecture, individual storage keys may be set for each half-page.	

DAT

Supervisor Call Description

Name:	DAT	Supervisor Call: 133
Function:	Intercept SVC interrupts.	
Properties:	Slow, Non-privileged	
Calling Sequence:	Same as for SVC SWPTRA (SVC 131)	
Return Value:	Doesn't return.	
Error Exit:	Same as for SVC SWPTRA (SVC 131), except that a DAT exit may be defined even if a DAT exit has already been defined at the current local CPU queue level.	
Description:	This is the same as SVC SWPTRA (SVC 131), except that the changing of the job's segment tables does not occur, and the PSW key and storage keys are not changed. If GR2 is zero any DAT exit at the current local CPU queue level is canceled. DAT exits are flagged with an exit code of "SVC". See the description of SVC SWPTRA (SVC 131) for details. See SVC TRAX (SVC 71) also.	

STARTASK

Supervisor Call Description

Name:	STARTASK	Supervisor Call: 134
Function:	This SVC is now obsolete.	
Properties:	Slow, Privileged	
Calling Sequence:	none	
Return Value:	none	
Error Exit:	None.	
Description:	The calling job is terminated with an SVC error.	

GETSTKEY (GETSTK)

Supervisor Call Description

Name:	GETSTKEY (GETSTK)	Supervisor Call: 135
Function:	Obtain the storage key for a page.	
Properties:	Slow, Privileged	
Calling Sequence:	GR 1 Page or half-page address	
Return Value:	GR 0 storage key in bits 24-30. Bit 23 will be on if the key is not a virtual machine key.	
Error Exit:	Same as for SVC SETSTKEY (SVC 132)	
Description:	If the global SETB symbol &KEY4K in COPY:GLOBALS is turned on, then information is returned for an entire page. If the symbol is turned off, then if the address given in GR1 specifies the first half of a page, the entire storage key is returned, while if the address given in GR1 specifies the second half of a page, then only bits 24-28 are returned and bits 29-30 will be zero.	

PEEK

Supervisor Call Description

Name:	PEEK	Supervisor Call: 136
Function:	To obtain up to 16 bytes from another job's VM.	
Properties:	Slow, Privileged	
Calling Sequence:	GR 0 Job number to move from GR 1 Virtual Memory address to move from GR 2 Number of bytes (maximum is 16)	
Return Value:	CC=0 OK CC=1 Job does not exist, or VM address is illegal CC=2 Page-in failure. GR 0-3 Contain the requested information (left justified)	
Error Exit:	None.	
Description:	The requested information is moved, if possible. This is the same as SVC MOVEFROM, where the absolute address is the calling job's job table. If GR2 is zero, negative, or >16 then 16 bytes are moved. This SVC can cause values in GR0 - GR3 to be clobbered if the data to be obtained is not immediately available (say if it needs to be paged in) and a higher level on the task's local CPU queue is executing when the data becomes available. The solution is to avoid the use of this SVC, to use SVC MOVEFROM where possible and to redesign SVC PEEK to allow the data to be returned into virtual memory.	

RSTTWAYT

Supervisor Call Description

Name:	RSTTWAYT	Supervisor Call: 137
Function:	To reset a TWAYT one level down on the local CPU queue.	
Properties:	Slow, Non-privileged	
Calling Sequence:	None.	
Return Value:	CC=0 OK CC=1 No local CPU queue entry below this one CC=2 No TWAYT on the entry	
Error Exit:	None.	
Description:	This SVC is intended to be used in an exit routine. It clears a timed wait condition on the previous local CPU queue entry. The wait may have been initiated either by SVC TWAYT (SVC 128) or SVC TIMER (SVC 78). An SVC POPQ will cause the job to resume execution following the SVC TWAYT or SVC TIMER.	

VMN

Supervisor Call Description

Name:	VMN		Supervisor Call: 138
Function:	To establish control status for a virtual 370.		
Properties:	Slow, Non-privileged		
Calling Sequence:	GR 0	bit 31	1 -> use the values of CR0 and CR1 from the control register area
		bit 30	1 -> use the value of CR8
		bit 29	1 -> change the prefix id to the value contained in GR2
	GR 1	Address of an area containing the virtual control registers 0-15	
	GR 2	Prefix address of the virtual CPU in bits 8-19	
Return Value:	CC=0	OK	
	CC=1	The segment and page tables pointed to by CR1 would cause a translation specification exception when used.	
	CC=3	The control register area is not addressible, or there is an illegal value in virtual CR0, or the virtual page tables have more than one entry with the same real page number.	
Error Exit:	None.		

Description:

This SVC sets up the control state for a virtual machine. The virtual control registers occupy a 16 word area in the task's address space. The bits in GR0 indicate which virtual control register values are being changed for this call. No matter which values are present for the call, the format of the control register area is always the same.

If GR0 bit 31 is on, it sets up shadow segment and page tables, so that when SVC SWPTRAEC is executed, the shadow segment table becomes the real segment table, and the shadow page table entries reference the appropriate pages in the virtual machine segment. The address in CR1 is an address in the virtual machine address space. The value of CR0 may specify either large segments (bit 11 on) or small

segments (bit 11 off), but must specify the large page size (bit 8 on, bit 9 off). There is a restriction on virtual page tables that requires that no real page have more than one virtual address. If this is violated, CC=3 is returned. This may be changed in the future.

If GR0 bit 30 is on, the value of CR8 is used to provide the mask for monitor call instructions when the task is in virtual machine mode.

If GR0 bit 29 is on, the prefix id in GR2 is used when constructing shadow segment and page tables. If there is no CR0, CR1 given in this call, a set of shadow tables is constructed to map virtual addresses to real addresses with the exception of the prefix page and its reverse page. This is the behavior of the old SVC PREFIXST, which is now obsolete.

If GR0 bits 29-31 are off, the supervisor storage containing the virtual machine control information is released. That storage will also be released when the task releases any space in the virtual machine segments. Therefore, calling SVC VMN with GR0 zero is not strictly necessary.

SWPTRAEC

Supervisor Call Description

Name:	SWPTRAEC	Supervisor Call: 139
Function:	To allow the simulation of running in a 370.	
Properties:	Slow, Non-privileged	
Calling Sequence:	GR 0-1 Same as for SVC TRA (SVC 40) GR 2 Pointer to parameter area as specified in SVC SETXIT (SVC 36) GR 3 bits 24-27 PSW key	
Return Value:	Doesn't return.	
Error Exit:	The job will be terminated with code SVCE if shadow page tables have not been attached (see SVC VMN), if the parameter area specified in GR2 is not addressible or is not on a full-word boundary or if the SVC is issued from non-privileged user mode and there is more than one entry on the task's local CPU queue.	
Description:	This is the same as SVC SWPTRA (SVC 131) except that the shadow segment and page tables are used, as set up by SVC VMN (SVC 138).	

PREFIXST

Supervisor Call Description

Name:	PREFIXST	Supervisor Call: 140
Function:	OBSOLETE. Job will be terminated with code SVCE.	

TIMERU

Supervisor Call Description

Name:	TIMERU	Supervisor Call: 141
Function:	Return the time of century in 360 timer units.	
Properties:	Fast, Non-privileged	
Calling Sequence:	None.	
Return Value:	GR 0 and GR 1 contain the time in 360 timer units since March 1, 1900 (one 360 timer unit = one 256th of a 300th of a second).	
Error Exit:	None.	
Description:	This SVC is used by the machine check error recovery software. SVC BINTIME (SVC 69) is recommended for normal applications. See SVCs TOD (SVC 28), GETELT (SVC 38) and GETELT2 (SVC 81) also.	

TOD2

Supervisor Call Description

Name: TOD2 Supervisor Call: 142

Function: OBSOLETE. job will be terminated with code SVCE.

Calling Sequence:

Return Value:

Error Exit:

Description:

VMDIAG

Supervisor Call Description

Name:	VMDIAG	Supervisor Call: 143
Function:	To execute a diagnose instruction.	
Properties:	Fast, Privileged	
Calling Sequence:	GR 0-3 Rx, Rx+1, Ry, Ry+1 parameters R15 Diagnose code	
Return Value:	GR 0-3 Return values from DIAGNOSE CC Condition code from DIAGNOSE	
Error Exit:	The job will be terminated with code SVCE if the system is not running under a virtual machine.	
Description:	A diagnose command is issued to VM with the specified parameters. Virtual addresses are translated to real before the diagnose instruction is issued to allow relocatable jobs to pass data to and receive data from VM.	

PER

Supervisor Call Description

Name:	PER		Supervisor Call: 144
Function:	To establish or clear the use of Program Event Recording to monitor the execution of a job.		
Properties:	Slow, Privileged		
Calling Sequence:	GR 0	bit 0	1 -> Enable successful-branch tracing
		bit 1	1 -> Enable instruction tracing
		bit 2	1 -> Enable storage alteration tracing
		bit 3	(unused)
		bit 4	(Meaningful only when bits 0-2 are zero) 0 -> Clear the subject job from any PER enables and any PER monitoring. (thus clearing any PER enables that the subject job had set for other jobs). 1 -> Clear the subject job from any PER enables.
		bit 5	Restore registers and POPQ.
		bit 6	0 -> Let subject run again. 1 -> Don't clear subject from any PER stops.
		bits 7-15	(unused)
		bits 16-31	Subject job number (zero -> current job)
	GR 1	CR10 (PER starting address)	
	GR 2	CR11 (PER ending address)	
	GR 3	Address of exit area.	
Return Value:	CC=0	OK	
	CC=1	Couldn't find the subject job.	
	CC=2	The exit area is unaddressable.	
	CC=3	GR0 specified only disable subject, and the subject job isn't being monitored by the caller.	
Error Exit:	None.		

Description:

This SVC allows one task to monitor another by means of program event recording. Once a monitor is set up, the monitoring job will receive an asynchronous exit each time the job being monitored causes a PER program interrupt. PER monitoring may include any or all of successful branch tracing, storage alteration tracing, and instruction tracing. The range of storage addresses to be monitored for branching/instruction fetching/alteration is also specifiable.

When the target job takes a PER interrupt, it is placed in a suspended state and the monitoring job receives an asynchronous exit. At the time of the exit, the monitor's PSW address is set from the first word of the exit area, GR1 is set to the exit area address, and GR2 is set to contain the CPU queue bits at the time of the exit. The exit area contains the following information:

Word 0	Exit routine address	
Word 1	Byte zero contains the ILC for the monitoring job	
Words 2-3	Monitoring job's PSW at the time of the exit	
Words 4-19	Monitoring job's registers at the time of the exit	
Word 20	Byte 0	Subject's ILC
	Byte 1	PER code
	Byte 2	Exit kind (0 for a PER interrupt, 1 if the subject job has terminated, 2 if another job has begun to monitor the subject job)
	Byte 3	RJBBTS3 field for subject job
Word 21	PER address (from the PSA)	
Words 22-23	Subject job's PSW	
Words 24-39	Subject job's registers	

SETQS

Supervisor Call Description

Name:	SETQS		Supervisor Call: 177
Function:	Set the minimum and maximum CPU queues for a job.		
Properties:	Slow, Privileged		
Calling Sequence:	GR 0	Bits 0-15	Task number (zero indicates calling task)
		Bits 16-23	Minimum queue number
		Bits 24-31	Maximum queue number
Return Value:	None.		
Error Exit:	The job is terminated with code SVCE if the minimum queue number is greater than the maximum queue number, or if the maximum queue number is too high.		
Description:	The minimum and maximum queue numbers for the specified job are reset to the specified values. If the specified job is not found, no action is taken and no error indication is returned.		

MOVER31

Supervisor Call Description

Name:	MOVER31	Supervisor Call: 178
Function:	Move data from one real memory location to another.	
Properties:	Fast, Privileged	
Calling Sequence:	GR 0 Address to be moved from GR 1 Address to be moved to GR 2 Length of data to be moved	
Return Value:	None.	
Error Exit:	The job will be terminated with a code of SVCE if it is not absolute, if the memory involved is not addressable, or if the storage areas overlap.	
Description:	This SVC moves data from one area of memory to another. In particular, it allows movement of data across the sixteen megabyte boundary.	

NAS

Supervisor Call Description

Name:	NAS	Supervisor Call: 193
Function:	To create, destroy, or manipulate Named Address Spaces.	
Properties:	Slow, Privileged	
Calling Sequence:	Bits 0-7 of GR0 contain a code indicating a request for a particular service. Depending upon the code specified, additional parameters may be passed in GR0 and GR1.	
Return Value:	Condition code zero normally indicates successful completion of the requested function.	
Error Exit:	The job will be terminated with code SVCE if the task is not relocatable, if an invalid function code is specified in bits 0-7 of GR0, or if any of the parameters to the requested function are invalid.	
Description:	This SVC privides a means of creating, destroying, and manipulating Named Address Space. A named address space is one or more segments of virtual memory, not necessarily contiguous, which can be inserted into and deleted from a relocatable job's segment table upon request. See the separate Named Address Space writeup for a complete discussion.	

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