

LF Command: Read Field Definitions

The LF command reads the characteristics of all fields in a file.

We recommend that you set unused ACB and ACBX fields to binary zeros before the direct call is initiated.

This chapter covers the following topics:

- Function and Use
 - ACB Interface Direct Call: LF Command
 - ACBX Interface Direct Call: LF Command
 - Buffers
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Function and Use

The LF command is used to read the field definition information for a file. This command is used primarily by Adabas subsystems; it is normally not used by an application program.

The user specifies the file number for which the field definitions are to be returned.

Adabas provides the field information in the record buffer in one of three formats, according to the setting of the Command Option 2 field.

ACB Interface Direct Call: LF Command

This section describes ACB interface direct calls for the LF command. It covers the following topics:

- Control Block and Buffer Overview
- Control Block Field Descriptions
- ACB Example

Control Block and Buffer Overview

Control Block

Field	Position	Format	Before Adabas Call	After Adabas Call
	1-2	--	--	--
Command Code	3-4	alphanumeric	F	U
	5-8	--	--	--
File Number	9-10	binary	F	U
Response Code	11-12	binary	--	A
	13-26	--	--	--
Record Buffer Length	27-28	binary	F	U
	29-35	--	--	--
Command Option 2	36	alphanumeric	F	U
	37-48	--	--	--
Additions 3	49-56	alphanumeric	F	A
	57-72	--	--	--
Command Time	73-76	binary	--	A
User Area	77-80	--	--	U

Buffer Areas

Buffer	Before Adabas Call	After Adabas Call
Format	*	--
Record	--	A

where:

- F Supplied by user before Adabas call
- A Supplied by Adabas
- U Unchanged after Adabas call
- * Not used but must be included in parameter list of call statement
- Not used

Control Block Field Descriptions

We recommend that you set unused ACB fields to binary zeros before the direct call is initiated.

Command Code (ACBCMD)

LF

File Number (ACBFNR)

The number of the file for which the field definition information is to be returned.

Note:

When using two-byte file numbers and database IDs, a X'30' must be coded in the first byte of the control block.

Response Code (ACBRSP)

Adabas returns the response code for the command in this field. Response code 0 indicates that the command was executed successfully. If the LF command returns a nonzero response code, the rightmost two bytes of Adabas control block bytes 45-48 (Additions 2 field) may contain a subcode defining the exact response code meaning. Response codes and their subcodes are defined in the *Adabas Messages and Codes Manual* documentation.

Record Buffer Length (ACBRBL)

The record buffer length (in bytes). The length specified must be large enough to contain all field definition information for the file, but not larger than the size of the record buffer area defined in the user program. If you specify the internal format (I) Command Option, the maximum possible output is four Associator blocks.

Command Option 2: Type of Information to Be Displayed (ACBCOP2)

The setting of the Command Option 2 field determines the format and type of field information to be returned in the record buffer.

Option	Description
S	<p>Returns all field information, including collation descriptor, subfield and superfield, subdescriptor, superdescriptor, hyperdescriptor, and phonetic descriptor information.</p> <p>If you are using Adabas 8, and an LF command with Command Option 2 set to "S" is run, and large object (LB) fields are encountered, the LB field description is returned in an F-type field element. Bit 6 in the second format byte (at offset 7 or byte 8 in the element) is set to indicate that the LB (large object) option is set for the field. In addition, bit 1 of the second format byte indicates whether the LB field is defined with the NB (no blank compression) option.</p> <p>Note: You cannot store or read much LB field data with ACB interface direct calls; all data must fit into one record buffer segment of at most 32 KB (minus 1 byte) length.</p>
I	Returns all field information in Adabas internal format.

If this field is left blank or contains binary zero, the LF command returns field information *excluding* sub-/super-/hyper-/phonetic or collation descriptor information. This is the same format as provided in Adabas version 4.

Additions 3: Password (ACBADD3)

This field is used to provide a security password. If the file to be used is not security-protected, this field should be set to blanks. If the file is security-protected, the user must provide a valid password.

If the accessed file is password-protected, Adabas replaces the password with blanks during command processing to protect password integrity.

ACB Example

The field definition information for file 1 is to be read.

Control Block

Command Code	LF	
File Number	1	field definitions requested for file 1
Record Buffer Length	100	
Command Option 2	S	information for all types of descriptors and sub/superfields is to be returned
Additions 3	<i>bbbbbbb</i> (blanks)	file is not security-protected

ACBX Interface Direct Call: LF Command

This section describes ACBX interface direct calls for the LF command. It covers the following topics:

- Control Block and Buffer Overview
- Control Block Field Descriptions

Control Block and Buffer Overview

Control Block

Field	Position	Format	Before Adabas Call	After Adabas Call
	1-2	---	---	---
Version Indicator	3-4	binary	F	U
	5-6	---	---	---
Command Code	7-8	alphanumeric	F	U
	9-10	---	---	---
Response Code	11-12	binary	---	A
	13-16	---	---	---
Database ID	17-20	numeric	F	U
File Number	21-24	numeric	F	U
	25-49	---	---	---
Command Option 2	50	alphanumeric	F	U
	51-68	---	---	---
Additions 3	69-76	alphanumeric/ binary	F	A
	77-114	---	---	---
Error Subcode	115-116	binary	---	A
	117-144	---	---	---
Command Time	145-152	binary	---	A
User Area	153-168	not applicable	---	U
---	169-193	do not touch	---	---

ABDs and Buffers

ABD and Buffer	Before Adabas Call	After Adabas Call
Format	*	--
Record	--	A

where:

- F Supplied by user before Adabas call
- A Supplied by Adabas
- U Unchanged after Adabas call
- * Not used but should be included in Adabas call or one will be automatically generated.
- Not used

Control Block Field Descriptions

We recommend that you set unused ACBX fields to binary zeros before the direct call is initiated.

Version Indicator (ACBXVER)

F2

Command Code (ACBXCMD)

LF

Response Code (ACBXRSP)

Adabas returns the response code for the command in this field. Response code 0 indicates that the command was executed successfully. Non-zero response codes, which can also have accompanying subcodes returned in the Error Subcode (ACBXERRC) field, are described in the *Adabas Messages and Codes Manual* documentation.

Database ID (ACBXDBID)

Use this field to specify the database ID. The Adabas call will be directed to this database.

This field is a four-byte binary field, but at this time only two-byte database IDs are supported. Therefore, the database ID should be specified in the low-order part (rightmost bytes) of the field, with leading binary zeros.

If this field is set to binary zeros, the Adabas API uses either the database ID from the ADARUN cards provided in DDCARD input data or the default database ID value provided in the LNKGBLS module linked with or loaded by the link routine.

File Number (ACBXFNR)

Use this field to specify the number of the file for which the field definition information is to be returned.

This field is a four-byte binary field, but the file number should be specified in the low-order part (rightmost bytes) of the field, with leading binary zeros.

Command Option 2: Type of Information to Be Displayed (ACBXCOP2)

The setting of the Command Option 2 field determines the format and type of field information to be returned in the record buffer.

Option	Description
S	Returns all field information, including collation descriptor, subfield and superfield, subdescriptor, superdescriptor, hyperdescriptor, and phonetic descriptor information. If you are using Adabas 8, and an LF command with Command Option 2 set to "S" is run, and large object (LB) fields are encountered, the LB field description is returned in an F-type field element. Bit 6 in the second format byte (at offset 7 or byte 8 in the element) is set to indicate that the LB (large object) option is set for the field. In addition, bit 1 of the second format byte indicates whether the LB field is defined with the NB (no blank compression) option.
I	Returns all field information in Adabas internal format.

If this field is left blank or contains binary zero, the LF command returns field information *excluding* sub-/super-/hyper-/phonetic or collation descriptor information. This is the same format as provided in Adabas version 4.

Additions 3: Password (ACBXADD3)

This field is used to provide a security password. If the file to be used is not security-protected, this field should be set to blanks. If the file is security-protected, the user must provide a valid password.

If the accessed file is password-protected, Adabas replaces the password with blanks during command processing to protect password integrity.

Error Subcode (ACBXERRC)

If the command returns a nonzero response code, this field contains a subcode defining the exact response code meaning. Response codes and their subcodes are defined in the *Adabas Messages and Codes Manual* documentation.

Buffers

The following buffers apply to the LF command:

- Format Buffer
- Record Buffer

Format Buffer

A format buffer is not used by the LF command, but should be included in the Adabas call. If this is an ACB interface direct call and a format buffer is not specified, a processing error will occur; ACB interface direct calls expect buffers to be specified in a set sequence. If this is an ACBX interface direct call and a format buffer is not specified, one will be automatically generated.

Record Buffer

All field definition information is returned in the record buffer.

- When Command Option 2 is Set to S
- When Command Option 2 is Set to I
- When Command Option 2 is Set to Neither S Or I

When Command Option 2 is Set to "S"

If the Command Option 2 field is set to "S", all field information, including collation descriptor, subdescriptor, superdescriptor, hyperdescriptor, and phonetic descriptor and sub-/superfield information is returned in the following format:

Note:

If you are using Adabas 8, and an LF command with Command Option 2 set to "S" is run, and large object (LB) fields are encountered, the LB field description is returned in an F-type FDT field definition. Bit 6 in the second format byte (at offset 7 or byte 8 in the element) is set to indicate that the LB (large object) option is set for the field. In addition, bit 1 of the second format byte indicates whether the LB field is defined with the NB (no blank compression) option.

Bytes	Usage
1-2	total length of information
3-4	number of fields in the FDT (including SDTs, as described below)
5-n	field definitions: each entry is 8 bytes, maximum number of entries is 926
(n+1) - m	special descriptor table (SDT) including <ul style="list-style-type: none"> ● sub-/superdescriptors (or sub-/superfields) ● phonetic descriptors ● hyperdescriptors ● collation descriptors The length of a sub-/phonetic/collation descriptor element is eight bytes. Superdescriptor or hyperdescriptor elements are two or more 8-byte entries long.

FDT Field Definitions

The syntax of FDT field definitions is:

```
'F' field-name option level length format
```


The following table describes this syntax:

Notation	Bytes	Usage
'F'	1	'F' indicates FDT field definition
<i>field-name</i>	2-3	field name
<i>option</i>	4	definition options: bit 1=1 descriptor bit 2=1 fixed length bit 3=1 multiple-value field bit 4=1 null suppression bit 5=1 periodic-group field bit 6=1 parent of phonetic descriptor bit 7=1 parent of sub-/superdescriptor bit 8=1 unique descriptor
<i>level</i>	5	level number (in binary)
<i>length</i>	6	length

Notation	Bytes	Usage
<i>format</i>	7	type of data: A alphanumeric B binary F fixed point G floating point P packed decimal U unpacked decimal W wide-character
	8	options (continued) bit 1 Unused, except if you are using Adabas 8, and an LF command with Command Option 2 set to "S" is run, and large object fields (LB fields) are encountered. In this case, bit 1 indicates whether the LB field is defined with the NB (no blank compression) option. bit 2=1 NV (not converted) option bit 3 (unused) bit 4=1 XI (exclude PE occurrence number from UQ) option bit 5=1 LA (long alpha) option bit 6 Unused, except if you are using Adabas 8, and an LF command with Command Option 2 set to "S" is run, and large object fields (LB fields) are encountered. In this case, bit 6 indicates that the LB (large object) option is set for the field. bit 7=1 NN option bit 8=1 NC option

Note:

A field within a periodic group has the following characteristics: - an option field (byte 4) with bit 5=1; and - a level field (byte 5) with level number *greater than* 1. The periodic group field itself always has option bit 5=1 and a level number of 1.

SDT Field Definitions

```
X SDT-definition
```

where X is one of the following:

- 'C' collation descriptor, see the section *Collation Descriptor Definition*
- 'H' hyperdescriptor, see the section *Hyperdescriptor Definition*
- 'P' phonetic descriptor, see the section *Phonetic Descriptor Definition*
- 'S' subfield/descriptor, see the section *Subfield/Subdescriptor Definition*
- 'T' superfield/descriptor, see the section *Superdescriptor/Superfield Definition*
- X'00' element continuation

Collation Descriptor Definition

```
'C' name option exit length p-field-name
```

Notation	Bytes	Usage
'C'	1	'C' indicates collation descriptor
<i>name</i>	2-3	collation descriptor name
<i>option</i>	4	definition options: bit 1=1 descriptor bit 2=1 exclude PE occurrence number from UQ bit 3=1 multiple-value format bit 4=1 null-value suppression bit 5=1 periodic-group field bits 6-7 (unused) bit 8=1 unique descriptor
<i>exit</i>	5	collation exit number (binary, values 1-8 permitted)
<i>length</i>	6	length
<i>p-field-name</i>	7-8	parent-field name

Hyperdescriptor Definition

```
'H' name option exit length format X'00'
X'00' X'00' p-fieldname-list ...
```

Notation	Bytes	Usage
'H'	1	'H' indicates a hyperdescriptor definition
<i>name</i>	2-3	hyperdescriptor name
<i>option</i>	4	definition options: bit 1 (unused) bit 2=1 fixed length bit 3=1 multiple value bit 4=1 null-value suppression bit 5=1 periodic group bit 6-7 (unused) bit 8=1 unique descriptor
<i>level</i>	5	hyperexit number (binary; values 1-31 permitted)
<i>length</i>	6	length
<i>format</i>	7	format: A alphanumeric B binary F fixed point G floating point P packed decimal U unpacked decimal
X'00'	8	options (continued) bits 1-3 (unused) bit 4=1 XI (exclude PE occurrence number from UQ) option bits 5-8 (unused)

A hyperdescriptor parent-field name list is an extension of a hyperdescriptor definition. It has the following format for all eight-byte groups after the first:

Notation	Bytes	Explanation
X'00'	1	X'00' indicates continuation
X'00'	2	(unused)
<i>p-fieldname-list...</i>	3-8	parent-field name list: each name is two bytes; six bytes total (that is, three names. If fewer than three names are provided, the additional bytes are filled with X'00').

Phonetic Descriptor Definition

'P' desc-name option p-field-name X'0000'

Notation	Bytes	Explanation
'P'	1	'P' indicates phonetic descriptor
<i>desc-name</i>	2-3	phonetic descriptor name
<i>option</i>	4	(unused)
<i>p-field-name</i>	5-6	parent-field name
X'0000'	7-8	(unused; set to nulls)

Subfield/Subdescriptor Definition

'S' s-name option p-field-name from to

Notation	Bytes	Usage
'S'	1	'S' indicates subdescriptor/subfield
<i>s-name</i>	2-3	subdescriptor or subfield name
<i>option</i>	4	definition options: bit 1=1 descriptor bit 2=1 exclude PE occurrence number from UQ bit 3=1 multiple-value format bit 4=1 null-value suppression bit 5=1 periodic-group field bit 6-7 (unused) bit 8=1 unique descriptor
<i>p-field-name</i>	5-6	parent-field name
<i>from</i>	7	starting (inclusive) byte
<i>to</i>	8	ending (inclusive) byte

Superdescriptor/Superfield Definition

```
'T' sup-name option p-field-name from to
X'00' X'000000'p-field-name from to
```


Bytes	Contents
1	X'80'
2	B'00000xyz' where xyz are ciphering bits: 1=yes; 0=no x user y new z old
3-4	binary zeros
5-8	total inclusive length of FDT, including field definition table (FDT proper), FDT index, and special descriptor table (SDT) [= p - 4]
9-12	Inclusive length of field definition table (FDT proper) [= n - 8]
13-n	FDT field descriptor elements (20 bytes per element; see the following description)
n+1 to n+4	Inclusive length of FDT index [= m - n]
n+5 to m	FDT index
m+1 to m+4	Inclusive length of special descriptor table (SDT) [= p - m]
m+5 to p	Special descriptor table (SDT)

The format of each FDT field descriptor elements is described in the following table:

Offset	Contents
0	field level
1 - 2	field name
3	special field options
4 - 6	reserved
7	default field length
8	field format
9	descriptor definition options
10	special descriptor parent options
11	periodic group count field
12-13	FDT element chain pointer
14	field security levels
15 - 19	reserved

The meaning of FDT elements is described in the Adabas architecture training information.

The FDT is stored in up to four Associator blocks. Therefore, the maximum possible record buffer length is the length of four Associator blocks.

When Command Option 2 is Set to Neither "S" Or "I"

Note:

Command option 2 may be set to values other than "I" or "S" to support older programs; these values do not support newer features. Software AG recommends "I" or "S" for new programs.

If the Command Option 2 field contains neither "I" nor "S", the field information returned *excludes* collation descriptor and sub-/super-/hyper-/phonetic descriptor information. The information is provided in the same format as provided in Adabas version 4:

```

n field-def
```

where:

- n* is the number of fields in the file. The number is provided as a four-byte binary number in the first four bytes of the record buffer.
- field-def* is the field definition information for each field within the file. The information for each field is provided in six bytes according to the following format:

Bytes	Usage
1	level number (binary)
2 - 3	name (alphanumeric)
4	standard length (binary)
5	standard format (alphanumeric):
	A alphanumeric
	B binary
	F fixed point
	G floating point
	P packed decimal
	U unpacked decimal
	W wide-character
6	definition options:
	bit1=1 descriptor
	bit 2=1 fixed storage
	bit 3=1 multiple-value field
	bit 4=1 null-value suppression
	bit 5=1 periodic group field
	bit 6=1 phonetic source field
	bit 7=1 sub-/superdescriptor source field
	bit 8=1 unique descriptor

The information for the next field immediately follows the information for the preceding field with no intervening spaces.