7.8.12 LE Create Connection command

Command	OCF	Command Parameters	Return Parameters
HCI_LE_Create_-Connection	0x000D	LE_Scan_Interval, LE_Scan_Window, Initiator_Filter_Policy, Peer_Address_Type, Peer_Address, Own_Address_Type, Connection_Interval_Min, Connection_Interval_Max, Max_Latency, Supervision_Timeout, Min_CE_Length, Max_CE_Length	

Description:

The HCI_LE_Create_Connection command is used to create an ACL connection, with the local device in the Central role, to a connectable advertiser.

If a connection is created with the local device in the Peripheral role while this command is pending, then this command remains pending.

The LE_Scan_Interval and LE_Scan_Window parameters are recommendations from the Host on how long (LE_Scan_Window) and how frequently (LE_Scan_Interval) the Controller should scan. The LE_Scan_Window parameter shall be set to a value smaller or equal to the value set for the LE_Scan_-Interval parameter. If both are set to the same value, scanning should run continuously.

The Initiator_Filter_Policy is used to determine whether the Filter Accept List is used. If the Filter Accept List is not used, the Peer_Address_Type and the Peer_Address parameters specify the address type and address of the advertising device to connect to.

Peer_Address_Type parameter indicates the type of address used in the connectable advertisement sent by the peer. The Host shall not set Peer_Address_Type to either 0x02 or 0x03 if both the Host and the Controller support the HCI_LE_Set_Privacy_Mode command. If a Controller that supports the HCI_LE_Set_Privacy_Mode command receives the HCI_LE_Create_Connection command with Peer_Address_Type set to either 0x02 or 0x03, it may use either device privacy mode or network privacy mode for that peer device.

Peer_Address parameter indicates the Peer's Public Device Address, Random (static) Device Address, Non-Resolvable Private Address or Resolvable Private Address depending on the Peer_Address_Type parameter.

Own_Address_Type parameter indicates the type of address being used in the connection request packets.

The Connection_Interval_Min and Connection_Interval_Max parameters define the minimum and maximum allowed connection interval. The Connection_Interval_Min parameter shall not be greater than the Connection_Interval_Max parameter.

The Max_Latency parameter defines the maximum allowed Peripheral latency (see [Vol 6] Part B, Section 4.5.1).

The Supervision_Timeout parameter defines the link supervision timeout for the connection. The Supervision_Timeout in milliseconds shall be larger than (1 + Max_Latency) * Connection_Interval_Max * 2, where Connection_Interval_Max is given in milliseconds. (See [Vol 6] Part B, Section 4.5.2).

The Min_CE_Length and Max_CE_Length parameters provide the Controller with the expected minimum and maximum length of the connection events. The Min_CE_Length parameter shall be less than or equal to the Max_CE_Length parameter. The Controller is not required to use these values.

If the Host issues this command when another HCI_LE_Create_Connection command is pending in the Controller, the Controller shall return the error code *Command Disallowed* (0x0C).

If the Own_Address_Type parameter is set to 0x00 and the device does not have a public address, the Controller should return an error code which should be *Invalid HCI Command Parameters* (0x12).

If the Own_Address_Type parameter is set to 0x01 and the random address for the device has not been initialized using the HCI_LE_Set_Random_Address command, the Controller shall return the error code *Invalid HCI Command Parameters* (0x12).

If the Own_Address_Type parameter is set to 0x02, the Initiator_Filter_Policy parameter is set to 0x00, the Controller's resolving list did not contain a matching entry, and the device does not have a public address, the Controller should return an error code which should be *Invalid HCI Command Parameters* (0x12).

If the Own_Address_Type parameter is set to 0x02, the Initiator_Filter_Policy parameter is set to 0x01, and the device does not have a public address, the Controller should return an error code which should be *Invalid HCI Command Parameters* (0x12).

If the Own_Address_Type parameter is set to 0x03, the Initiator_Filter_Policy parameter is set to 0x00, the controller's resolving list did not contain a

matching entry, and the random address for the device has not been initialized using the HCI_LE_Set_Random_Address command, the Controller shall return the error code *Invalid HCI Command Parameters* (0x12).

If the Own_Address_Type parameter is set to 0x03, the Initiator_Filter_Policy parameter is set to 0x01, and the random address for the device has not been initialized using the HCI_LE_Set_Random_Address command, the Controller shall return the error code *Invalid HCI Command Parameters* (0x12).

Command parameters:

LE_Scan_Interval: *Size: 2 octets*

Value	Parameter Description
N = 0xXXXX	This is defined as the time interval from when the Controller started its last LE scan until it begins the subsequent LE scan. Range: 0x0004 to 0x4000 Time = N * 0.625 ms Time Range: 2.5 ms to 10.24 s

LE_Scan_Window: *Size: 2 octets*

Value	Parameter Description
N = 0xXXXX	Amount of time for the duration of the LE scan. LE_Scan_Window shall be less than or equal to LE_Scan_Interval Range: 0x0004 to 0x4000 Time = N * 0.625 ms Time Range: 2.5 ms to 10.24 s

Initiator_Filter_Policy: *Size: 1 octet*

Value	Parameter Description
0x00	Filter Accept List is not used to determine which advertiser to connect to. Peer_Address_Type and Peer_Address shall be used.
0x01	Filter Accept List is used to determine which advertiser to connect to. Peer_Address_Type and Peer_Address shall be ignored.
All other values	Reserved for future use.

Peer_Address_Type: *Size: 1 octet*

Value	Parameter Description
0x00	Public Device Address
0x01	Random Device Address

Value	Parameter Description
0x02	Public Identity Address (Corresponds to peer's Resolvable Private Address). This value shall only be used by the Host if either the Host or the Controller does not support the HCI_LE_Set_Privacy_Mode command.
0x03	Random (static) Identity Address (Corresponds to peer's Resolvable Private Address). This value shall only be used by a Host if either the Host or the Controller does not support the HCI_LE_Set_Privacy_-Mode command.
All other values	Reserved for future use

Peer_Address: *Size: 6 octets*

Value	Parameter Description
0xXXXXXXXXXXXX	Public Device Address, Random Device Address, Public Identity Address, or Random (static) Identity Address of the device to be connected

Own_Address_Type: *Size: 1 octet*

Value	Parameter Description
0x00	Public Device Address
0x01	Random Device Address
0x02	Controller generates Resolvable Private Address based on the local IRK from the resolving list. If the resolving list contains no matching entry, use the public address.
0x03	Controller generates Resolvable Private Address based on the local IRK from the resolving list. If the resolving list contains no matching entry, use the random address from the most recent successful HCI_LE_Set_Random_Address command.
All other values	Reserved for future use

Connection_Interval_Min: *Size: 2 octets*

Value	Parameter Description
N = 0xXXXX	Minimum value for the connection interval. This shall be less than or equal to Connection_Interval_Max. Range: 0x0006 to 0x0C80 Time = N * 1.25 ms Time Range: 7.5 ms to 4 s.

Connection_Interval_Max: *Size: 2 octets*

Value	Parameter Description
N = 0xXXXX	Maximum value for the connection interval. This shall be greater than or equal to Connection_Interval_Min. Range: 0x0006 to 0x0C80 Time = N * 1.25 ms Time Range: 7.5 ms to 4 s.

Max_Latency: *Size: 2 octets*

Value	Parameter Description
0xXXXX	Maximum Peripheral latency for the connection in number of connection events. Range: 0x0000 to 0x01F3

Supervision_Timeout: *Size: 2 octets*

Value	Parameter Description
N = 0xXXXX	Supervision timeout for the LE Link. (See [Vol 6] Part B, Section 4.5.2) Range: 0x000A to 0x0C80 Time = N * 10 ms Time Range: 100 ms to 32 s

Min_CE_Length: *Size: 2 octets*

Value	Parameter Description
N = 0xXXXX	The minimum length of connection event recommended for this LE connection. Range: 0x0000 to 0xFFFF Time = N * 0.625 ms.

Max_CE_Length: *Size: 2 octets*

Value	Parameter Description
N = 0xXXXX	The maximum length of connection event recommended for this LE connection. Range: 0x0000 to 0xFFFF Time = N * 0.625 ms.

Return parameters:

None.

Event(s) generated (unless masked away):

When the Controller receives the HCI_LE_Create_Connection command, the Controller sends the HCI_Command_Status event to the Host. An HCI_LE_-Connection_Complete or HCI_LE_Enhanced_Connection_Complete event shall be generated when a connection is created because of this command or the connection creation procedure is cancelled; until one of these events is generated, the command is considered pending. If a connection is created and the Controller supports the LE Channel Selection Algorithm #2 feature, this event shall be immediately followed by an HCI_LE_Channel_Selection_-Algorithm event.