TABLEAU

Tableau Bridge Query – Technical Documentation

SCSI TABLEAU QUERY

The SCSI TABLEAU QUERY command is used to retrieve identifying information and operational state from a Tableau forensic bridge.

SCSI TABLEAU QUERY Command Descriptor Block

Bit Byte	7	6	5	4	3	2	1	0
0	OPERATION CODE (ECh)							
1	RESERVED							
2	RESERVED							
3	RESERVED							
4	ALLOCATION LENGTH							
5	RESERVED							

ALLOCATION LENGTH specifies the maximum number of bytes which may be returned by the forensic bridge in response to the SCSI TABLEAU QUERY command. ALLOCATION LENGTH must be at least 4, or the forensic bridge will fail the request.

The SCSI TABLEAU QUERY response begins with a common header which may be followed by zero or more optional pages.

SCSI TABLEAU QUERY Data – Common Header

Bit Byte	7	6	5	4	3	2	1	0
0	RESERVED							
1	AVAILABLE RESPONSE LENGTH							
2	(MSB)	RESPONSE SIGNATURE						
3								(LSB)
4	RESERVED							
5	FIRMWARE STEPPING							
6	CHANNEL INDEX				CHANNEL TYPE			

7	RESERVED	DECERR	DECRO	RW	DBG
8	(MSB)				
9					
10					
11					
12	BRIDGE SERIAL NUMBER				
13					
14					
15					(LSB)
16 - 23	BRIDGE VENDOR				
24 - 31	BRIDGE MODEL				
32 - 43	FIRMWARE BUILD DATE				
44 - 55	FIRMWARE BUILD TIME				
56 - 63	DRIVE VENDOR				
64 - 91	DRIVE MODEL				
92 - 111	DRIVE SERIAL NUMBER				
112 - 119	DRIVE REVISION				

AVAILABLE RESPONSE LENGTH is the total length of response data which can be returned by the forensic bridge in its current operational state. AVAILABLE RESPONSE LENGTH may be more or less than the ALLOCATION LENGTH specified by the host in the CDB.

RESPONSE SIGNATURE is a 16-bit value which should be used by the host to validate the response data. The response data is valid when RESPONSE SIGNATURE equals 0ECCh.

FIRMWARE STEPPING indicates the firmware stepping level of the forensic bridge. This value is not generally meaningful to third party developers.

CHANNEL TYPE indicates the type of device interface currently in use as follows:

CHANNEL TYPE	
0	IDE
1	SATA
2	SCSI
3	USB

When a forensic bridge supports more than one channel of a given type, CHANNEL INDEX specifies the index of the device interface channel currently in use. CHANNEL INDEX values begin with 0.

Byte 7 of the response includes several flag bits indicating the forensic bridges current operating state.

The DBG bit indicates whether the forensic bridge is running release (DBG = 0) or debug (DBG = 1) firmware.

The RW bit indicates whether the forensic bridge is in write-blocking mode (RW = 0) or read/write mode (RW = 1).

The DECRO bit indicates whether the forensic bridge declares its read-only (i.e., write-blocked) state to the host (DECRO = 1) or whether this state is not declared (DECRO = 0). This flag bit is meaningful only when the forensic bridge is in write-blocking mode.

The DECERR bit indicates whether the forensic bridge reports errors when write attempts are blocked (DECERR = 1) or suppresses the error reporting (DECERR = 0). This flag bit is meaningful only when the forensic bridge is in write-blocking mode.

BRIDGE SERIAL NUMBER is a 64-bit field which contains the unique serial number assigned to the forensic bridge. NOTE: This serial number is tied to the forensic bridge, not to a storage device which may be attached to the bridge.

BRIDGE VENDOR is an 8-byte string field containing the bridge vendor name in ASCII (e.g., “Tableau”). Strings shorter than 8 characters are right-padded with ASCII spaces. Strings are not terminated with a NULL.

BRIDGE MODEL is an 8-byte string field containing the bridge model name in ASCII (e.g., “T4”). Strings shorter than 8 characters are right-padded with ASCII spaces. Strings are not terminated with a NULL.

FIRMWARE BUILD DATE is a 12-byte string field containing the bridge firmware build date in ASCII (e.g., “Mar 30 2004”). Strings shorter than 12 characters are right-padded with ASCII spaces. Strings are not terminated with a NULL.

FIRMWARE BUILD TIME is a 12-byte string field containing the bridge firmware build time in ASCII (e.g., “12:34:29”). Strings shorter than 12 characters are right-padded with ASCII spaces. Strings are not terminated with a NULL.

DRIVE VENDOR is an 8-byte string field containing the storage device’s vendor name in ASCII. Strings shorter than 8 characters are right-padded with ASCII spaces. Strings are not terminated with a NULL. NOTE: The DRIVE VENDOR field is returned only for certain models of forensic bridges (e.g., SCSI bridges). If the DRIVE VENDOR field is filled entirely with ASCII spaces, then the DRIVE MODEL field most likely contains vendor identifying information.

DRIVE MODEL is a 28-byte string field containing the storage device’s model name in ASCII. Strings shorter than 28 characters are right-padded with ASCII spaces. Strings are not terminated with a NULL.

DRIVE SERIAL NUMBER is 20-byte string field containing the storage device’s serial number in ASCII. Strings shorter than 20 characters are right-padded with ASCII spaces. Strings are not terminated with a NULL. NOTE: The DRIVE SERIAL NUMBER is returned only when the ability to query the storage device’s serial number is supported by the storage interface channel currently in use (e.g., IDE, SATA, and USB devices generally support unique serial numbers).

DRIVE REVISION is an 8-byte string field containing the storage device's revision level in ASCII (e.g., "Tableau"). Strings shorter than 8 characters are right-padded with ASCII spaces. Strings are not terminated with a NULL.

The response data common header may be followed by zero or more additional information pages. At present, only one such optional page is defined.

SCSI TABLEAU QUERY Data – HPA/DCO Page

Bit Byte	7	6	5	4	3	2	1	0
0	PAGE ID							
1	PAGE LENGTH							
2	RESERVED		SECUSE	SECSUP	DCOUSE	DCOSUP	HPAUSE	HPASUP
3	RESERVED							
4	RESERVED							
5	RESERVED							
6	RESERVED							
7	RESERVED							
8	(MSB)							
9				REPORTED CAPACITY				
10								
11								(LSB)
12	RESERVED							
13	RESERVED							
14	RESERVED							
15	RESERVED							
16	(MSB)							
17				HPA CAPACITY				
18								
19								(LSB)
20	RESERVED							

21	RESERVED	
22	RESERVED	
23	RESERVED	
24	(MSB)	
25	DCO CAPACITY	
26		
27		(LSB)
28	RESERVED	
29	RESERVED	
30	RESERVED	
31	RESERVED	

For the HPA/DCO page, PAGE ID is 00h and the PAGE LENGTH is 20h.

Byte 2 of the HPA/DCO page contains flag bits which indicate the state of HPA (Host Protected Area), DCO (Device Configuration Overlay), and security settings as reported by the attached storage device.

HPASUP, DCOSUP, and SECSUP are set to 1 to indicate that the storage device supports the HPA, DCO, and Security feature sets, respectively. HPAUSE and DCOUSE are set to 1 to indicate that the forensic bridge has determined that HPA and/or DCO, respectively, has actually been used to reduce the apparent capacity of the storage device. SECUSE is set to 1 to indicate that the security feature set may currently be in use on the storage device.

NOTE: HPA, DCO, and Security feature sets correspond to terms of the same names as used in ATA specifications. At present, Tableau forensic bridges do not support HPA, DCO, or security features on SCSI or USB devices.

REPORTED CAPACITY is the sector count reported by the attached storage device after power ON.

HPA CAPACITY is the sector count of the storage device as revealed by the HPA feature set.

DCO CAPACITY is the sector count of the storage device as revealed by the DCO feature set.