

TWAIN Mandatory Features

The following list of triplets and capabilities map out the minimum required set of features that all Sources must offer programmatically to be TWAIN compliant.

Further in this chapter, additional mandatory capabilities are listed based on the value set for a Capability that has been implemented, or when a Source with a specific feature is being used.

| Operations | Version Required |
|---|------------------|
| DG_CONTROL / DAT_CAPABILITY / MSG_GET | 1.5 |
| DG_CONTROL / DAT_CAPABILITY / MSG_GETCURRENT | 1.5 |
| DG_CONTROL / DAT_CAPABILITY / MSG_GETDEFAULT | 1.5 |
| DG_CONTROL / DAT_CAPABILITY / MSG_RESET | 1.5 |
| DG_CONTROL / DAT_CAPABILITY / MSG_SET | 1.5 |
| DG_CONTROL / DAT_EVENT / MSG_PROCESSEVENT | 1.5 |
| DG_CONTROL / DAT_IDENTITY / MSG_GET | 1.5 |
| DG_CONTROL / DAT_IDENTITY / MSG_OPENDS | 1.5 |
| DG_CONTROL / DAT_IDENTITY / MSG_CLOSED | 1.5 |
| DG_CONTROL / DAT_PENDINGXFERS / MSG_ENDXFER | 1.5 |
| DG_CONTROL / DAT_PENDINGXFERS / MSG_GET | 1.5 |
| DG_CONTROL / DAT_PENDINGXFERS / MSG_RESET | 1.5 |
| DG_CONTROL / DAT_SETUPMEMXFER / MSG_GET | 1.5 |
| DG_CONTROL / DAT_STATUS / MSG_GET | 1.5 |
| DG_CONTROL / DAT_USERINTERFACE / MSG_DISABLED | 1.5 |
| DG_CONTROL / DAT_USERINTERFACE / MSG_ENABLED | 1.5 |
| DG_CONTROL / DAT_XFERGROUP / MSG_GET | 1.5 |
| DG_IMAGE / DAT_IMAGEINFO / MSG_GET | 1.5 |
| DG_IMAGE / DAT_IMAGELAYOUT / MSG_GET | 1.5 |
| DG_IMAGE / DAT_IMAGELAYOUT / MSG_GETDEFAULT | 1.5 |
| DG_IMAGE / DAT_IMAGELAYOUT / MSG_RESET | 1.5 |
| DG_IMAGE / DAT_IMAGELAYOUT / MSG_SET | 1.5 |
| DG_IMAGE / DAT_IMAGEMEMXFER / MSG_GET | 1.5 |
| DG_IMAGE / DAT_IMAGENATIVEXFER / MSG_GET | 1.5 |
| DG_CONTROL / DAT_CAPABILITY / MSG_QUERY SUPPORT | 1.9 |
| DG_CONTROL / DAT_USERINTERFACE / MSG_ENABLED * | 1.9 |
| * Support both UI and Programmatic Control Through: (Show UI == TRUE) [UI Control] (Show UI == FALSE) [Programmatic Control] | |
| DG_CONTROL / DAT_CAPABILITY / MSG_RESETALL | 1.91 |
| DG_CONTROL / DAT_CAPABILITY / MSG_GET * | 2.0 |
| *For TW_BOOL capabilities return enumerations when the Application is 2.0 or greater. Return one value when the application less than 2.0 | |

| Capabilities | Requirements | Version Required |
|---------------------|----------------------------------|-------------------------|
| CAP_SUPPORTEDCAPS | MSG_GET required | 1.5 |
| CAP_UICONTROLLABLE | MSG_GET required | 1.5 |
| CAP_XFERCOUNT | All MSG_* operations required | 1.5 |
| ICAP_COMPRESSION | All MSG_GET* operations required | 1.5 |
| ICAP_BITDEPTH | All MSG_* operations required | 1.5 |
| ICAP_BITORDER | All MSG_* operations required | 1.5 |
| ICAP_PLANARCHUNKY | All MSG_GET* operations required | 1.5 |
| ICAP_PHYSICALHEIGHT | All MSG_GET* operations required | 1.5 |
| ICAP_PHYSICALWIDTH | All MSG_GET* operations required | 1.5 |
| ICAP_PIXELFLAVOR | All MSG_GET* operations required | 1.5 |
| ICAP_PIXELTYPE | All MSG_* operations required | 1.5 |
| ICAP_UNITS | All MSG_* operations required | 1.5 |
| ICAP_XFERMECH | All MSG_* operations required | 1.5 |
| ICAP_XRESOLUTION | All MSG_* operations required | 1.5 |
| ICAP_YRESOLUTION | All MSG_* operations required | 1.5 |
| CAP_DEVICEONLINE | MSG_GET required | 1.6 |
| CAP_UICONTROLLABLE | (Value = TRUE) | 1.9 |

Mandatory Features Dependencies

SUPPORTED GROUPS

| When source supports: | Must support: | Version intro: |
|-----------------------|---------------------------------------|----------------|
| DF_DS2 | DG_CONTROL / DAT_ENTRYPOINT / MSG_SET | 2.0 |

CUSTOM CONTENT

| When source supports: | Must respond to: | Mandatory capability: | Version intro: |
|-----------------------|--|-------------------------|----------------|
| Custom Content | DG_CONTROL / DAT_CAPABILITY MSG_GET MSG_GETLABEL MSG_GETLABELENUM | CAP_CUSTOMINTERFACEGUID | 2.1 |

ICAP_PIXELTYPE

| When value is: | Must respond to: | Mandatory capability: | Version intro: |
|----------------|--|------------------------|----------------|
| TWPT_BW | DG_CONTROL / DAT_CAPABILITY All MSG_* | ICAP_BITDEPTHREDUCTION | 1.5 |

ICAP_BITDEPTHREDUCTION

| When value is: | Must respond to: | Mandatory capabilities: | Version intro: |
|-------------------|--|-------------------------|----------------|
| TWBR_HALFTONE | DG_CONTROL / DAT_CAPABILITY All MSG_* | ICAP_HALFTONES | 1.0 |
| TWBR_CUSTHALFTONE | DG_CONTROL / DAT_CAPABILITY All MSG_* | ICAP_CUSTHALFTONE | 1.0 |
| TWBR_THRESHOLD | DG_CONTROL / DAT_CAPABILITY All MSG_* | ICAP_THRESHOLD | 1.5 |

ICAP_XFERMECH

| When value is: | Must support | Version intro: |
|----------------|---|----------------|
| TWSX_FILE | ICAP_IMAGEFILEFORMAT | 1.0 |
| | DG_CONTROL / DAT_SETUPFILEXFER / MSG_GET, MSG_SET | |
| | DG_IMAGE / DAT_IMAGEFILEXFER / MSG_GET | |

ICAP_SUPPORTEDSIZES

| When source supports: | Must respond to: | Mandatory capability: | Version intro: |
|---|--|------------------------------|-----------------------|
| Document Scanning using Fixed Frame Sizes | DG_CONTROL / DAT_CAPABILITY All MSG_* | ICAP_SUPPORTEDSIZES | 1.0 |

Document Feeders

Basic document feeder devices are those that have paper trays to hold one or more documents for transfer. Unique aspects of a document feeder include the ability to transfer more than one image, the typical inability to re-scan the same page twice, and the fact that if there is no paper loaded, it is usually impossible to scan.

ALL DOCUMENT FEEDERS

| When source is a: | Must respond to: | Mandatory capabilities: | Version intro: |
|--------------------------|---|--|-----------------------|
| Document Feeder | DG_CONTROL / DAT_CAPABILITY All MSG_GET* | CAP_FEEDERENABLED CAP_PAPERDETECTABLE CAP_AUTOFEED | 1.0 1.6 1.0 |

CAP_PAPERDETECTABLE

| When value is: | Must respond to: | Mandatory capability: | Version intro: |
|-----------------------|---|------------------------------|-----------------------|
| TRUE | DG_CONTROL / DAT_CAPABILITY All MSG_GET* | CAP_FEEDERLOADED | 1.0 |

CAP_AUTOFEED

| When value is: | Must provide <i>advanced paper handling</i> through: | Version intro: |
|-----------------------|--|--------------------------|
| FALSE | CAP_EXTENDED CAPS CAP_FEEDPAGE CAP_CLEARPAGE CAP_REWINDPAGE | 1.0 1.0 1.0 1.0 |

Special Case

ADF/FLATBED COMBO SCANNER

| When source is a: | Must respond to: | Mandatory capability: | Version intro: |
|-----------------------------|---|--------------------------|----------------|
| Flatbed / ADF combo scanner | DG_CONTROL / DAT_CAPABILITY All MSG_ * | CAP_AUTOMATICSENSEMEDIUM | 2.1 |

DUPLEX

| When source supports: | Must respond to: | Mandatory capabilities: | Version intro: |
|-----------------------|---|---------------------------------|----------------|
| Duplex scanning | DG_CONTROL / DAT_CAPABILITY All MSG_ * | CAP_DUPLEX CAP_DUPLEXENABLED | 1.7 1.7 |

PRINTERS

| When source controls: | Must respond to: | Mandatory capabilities: | Version intro: |
|-------------------------|---|-----------------------------------|----------------|
| Any printer type device | DG_CONTROL / DAT_CAPABILITY All MSG_ * | CAP_PRINTERENABLED CAP_PRINTER | 1.8 1.8 |

ICAP_PRINTERMODE

| When source supports: | Must respond to: | Mandatory capability: | Version intro: |
|-----------------------|---|-----------------------|----------------|
| CAP_PRINTERSTRING | DG_CONTROL / DAT_CAPABILITY All MSG_ * | CAP_PRINTERMODE | 1.8 |
| CAP_PRINTERSUFFIX | DG_CONTROL / DAT_CAPABILITY All MSG_ * | CAP_PRINTERMODE | 1.8 |

ENDORSER

| When source controls: | Must respond to: | Mandatory capability: | Version intro: |
|-----------------------|---|--|----------------|
| Endorser | DG_CONTROL / DAT_CAPABILITY All MSG_ * | ICAP_SUPPORTEDEXTIMAGEINFO CAP_ENDORSER | 2.1 1.7 |

Production Quality High Speed/Volume Scanners

Production Quality High Speed/Volume scanners have greater demands on TWAIN. With diverse features like bar code reading, imprinting and compressions, they require much more attention to detail. Production drivers should be prepared to serve applications that wish to achieve complete programmatic control of all typical and custom features and this requires a VERY robust TWAIN implementation.

Mid- and High-volume scanners must support the following operational triplets:

DG_CONTROL / DAT_USERINTERFACE / MSG_ENABLEDSUIONLY

DG_CONTROL / DAT_CUSTOMSDATA / MSG_GET & MSG_SET

INTERNAL IMAGE BUFFER

| When source supports: | Must respond to: | Mandatory capabilities: | Version intro: |
|--|--|---|-------------------|
| Transfer of multiple images ahead of retrieval | DG_CONTROL / DAT_CAPABILITY All MSG_* | CAP_AUTOSCAN CAP_MAXBATCHBUFFERS CAP_CLEARBUFFERS | 1.6 1.8 1.8 |

ICAP_UNDEFINEDIMAGESIZE

| When source supports: | Must respond to: | Mandatory capability: | Version intro: |
|-------------------------------|---|-------------------------|----------------|
| ICAP_AUTOSIZE | DG_CONTROL / DAT_CAPABILITY All MSG_* | ICAP_UNDEFINEDIMAGESIZE | 2.0 |
| ICAP_AUTOMATICBORDERDETECTION | DG_CONTROL / DAT_CAPABILITY All MSG_* | ICAP_UNDEFINEDIMAGESIZE | 1.8 |
| ICAP_AUTOMATICLENGTHDETECTION | DG_CONTROL / DAT_CAPABILITY All MSG_* | ICAP_UNDEFINEDIMAGESIZE | 2.1 |
| ICAP_AUTOMATICROTATE | DG_CONTROL / DAT_CAPABILITY All MSG_* | ICAP_UNDEFINEDIMAGESIZE | 1.8 |
| ICAP_FLIPROTATION | DG_CONTROL / DAT_CAPABILITY All MSG_* | ICAP_UNDEFINEDIMAGESIZE | 1.8 |

ICAP_COMPRESSION

| When value is: | Must respond to: | Mandatory capabilities: | Version intro: |
|----------------|---|--|----------------|
| TWCP_JPEG | DG_CONTROL / DAT_CAPABILITY All MSG_GET* | ICAP_JPEGPIXELTYPE ICAP_JPEGQUALITY | 1.5 1.9 |

| When value is: | Must respond to: | Mandatory capabilities: | Version intro: |
|----------------|---|-------------------------|----------------|
| TWCP_GROUP32D | DG_CONTROL / DAT_CAPABILITY All MSG_GET* | ICAP_CCITTKFACTOR | 1.0 |

| When value is: | Must respond to: | Mandatory capabilities: | Version intro: |
|----------------|---|-------------------------|----------------|
| TWCP_GROUP3 | DG_CONTROL / DAT_CAPABILITY All MSG_GET* | ICAP_TIMEFILL | 1.5 |

EXTENDED IMAGE INFO

| When source supports: | Must respond to: | Mandatory capabilities: | Version intro: |
|--------------------------------|--|----------------------------|----------------|
| Extended image info | DG_CONTROL / DAT_CAPABILITY MSG_GET | ICAP_EXTIMAGEINFO | 1.7 |
| | | ICAP_SUPPORTEDEXTIMAGEINFO | 2.1 |
| Extended image info | DG_CONTROL / DAT_EXTIMAGEINFO | Mandatory values: | |
| | | TWEI_DOCUMENTNUMBER | 1.9 |
| | | TWEI_PAGENUMBER | 1.9 |
| | | TWEI_CAMERA | 1.9 |
| | | TWEI_FRAMENUMBER | 1.9 |
| | | TWEI_FRAME | 1.9 |
| TWEI_PIXELFLAVOR | 1.9 | | |
| Extended image info and duplex | DG_CONTROL / DAT_EXTIMAGEINFO | Mandatory value: | |
| | | TWEI_PAGESIDE | 2.1 |

PATCH CODE DETECTION*

| When source controls: | Must respond to: | Mandatory capabilities: | Version intro: |
|-----------------------|---|--------------------------------|----------------|
| Patch Code Detection | DG_CONTROL / DAT_CAPABILITY All MSG_* | ICAP_PATCHCODEDETECTIONENABLED | 1.8 |
| | | ICAP_SUPPORTEDPATCHCODETYPES | 1.8 |
| | | CAP_JOBCONTROL | 1.7 |

* Note: Source must also fill in the extended EOJ field of the TW_PENDINGXFERS structure when CAP_JOBCONTROL is enabled. See DG_CONTROL / DAT_PENDINGXFERS / MSG_ENDXFER

BARCODE DETECTION

| When source controls: | Must respond to: | Mandatory capabilities: | Version intro: |
|-----------------------|---|---|-------------------|
| Bar Code Detection | DG_CONTROL / DAT_CAPABILITY All MSG_* | ICAP_EXTIMAGEINFO ICAP_BARCODEDETECTIONENABLED ICAP_SUPPORTEDBARCODETYPES | 1.7 1.8 1.8 |

ALARMS

| When source controls: | Must respond to: | Mandatory capability: | Version intro: |
|-----------------------|--|-----------------------|----------------|
| Audible alarms | DG_CONTROL / DAT_CAPABILITY All MSG_* | CAP_ALARMS | 1.8 |
| Alarm volume | DG_CONTROL / DAT_CAPABILITY All MSG_* | CAP_ALARMVOLUME | 1.8 |

MICR DETECTION

| When source supports: | Must respond to: | Mandatory capabilities: | Version intro: |
|-----------------------|--|--|-------------------|
| Reading Micr data | DG_CONTROL / DAT_CAPABILITY All MSG_* | ICAP_EXTIMAGEINFO ICAP_SUPPORTEDEXTIMAGEINFO CAP_MICRENABLED | 1.7 2.1 2.0 |

Permanent Storage/Retrieval Devices

Permanent storage/retrieval devices are unique in that more than one image is stored and the dimensions and bit depth may vary from image to image. These devices could be just a database of images, or a PCMCIA card from a Digital Camera. Such devices need features for browsing the available images, retrieve properties and select sets of images for transfer.

PERMANENT STORAGE/RETRIEVAL

| When source supports: | Required operations: | Mandatory capability: | Version intro: |
|-----------------------------|---|------------------------------|----------------|
| Permanent Storage Retrieval | DG_CONTROL / DAT_FILESYSTEM / MSG_COPY, MSG_DELETE, MSG_CREATEDIRECTORY, MSG_AUTOMATICCAPTURED, MSG_FORMATMEDIA, MSG_GETFIRSTFILE, MSG_GETINFO, MSG_GETNEXTFILE, MSG_RENAME | | |
| | Must respond to: | Mandatory capability: | |
| | DG_CONTROL / DAT_CAPABILITY All MSG_* | ICAP_IMAGE DATASET | 1.7 |

ANNOTATION

| When source supports: | Must respond to: | Mandatory capability: | Version intro: |
|-----------------------|--|---|-------------------|
| Annotation | DG_CONTROL / DAT_CAPABILITY All MSG_* | CAP_AUTHOR CAP_CAPTION CAP_TIMEDATE | 1.0 1.0 1.0 |

FLASH

| When source supports: | Must respond to: | Mandatory capability: | Version intro: |
|-----------------------|--|-----------------------|----------------|
| Flash | DG_CONTROL / DAT_CAPABILITY All MSG_* | ICAP_FLASHUSED2 | 1.8 |

AUDIO DEVICES

| When source supports: | Must respond to: | Mandatory capability: | Version intro: |
|---|--|-----------------------|----------------|
| Audio snippets to be associated with an image | DG_CONTROL / DAT_CAPABILITY All MSG_* | ACAP_XFERMECH | 1.8 |

| When source supports: | Must respond to: | | |
|----------------------------|--|--|--|
| Transfer of Audio snippets | DG_CONTROL / DAT_XFERGROUP / MSG_SET with a value of DG_AUDIO | | |
| | And support these operations: | | |
| | DG_AUDIO/DAT_AUDIOFILEXFER/MSG_GET DG_AUDIO/DAT_AUDIONATIVEXFER/MSG_GET | | |

Portable Capture Devices

Portable capture devices are very similar to permanent storage and retrieval devices in that they typically store a number of images, however they differ in that they often have real time capture opportunities and limitations related to battery life and lenses. Examples of such devices would be Digital Camera's and Camcorders.

ASYNCHRONOUS DEVICE EVENTS

| When source supports: | Must respond to: | Mandatory capability: | Version intro: |
|----------------------------|--|-----------------------|----------------|
| Asynchronous Device Events | DG_CONTROL / DAT_CAPABILITY All MSG_* | CAP_DEVICEEVENT | 1.8 |

STREAM IMAGES

| When source supports: | Must respond to: | Mandatory capability: | Version intro: |
|-----------------------------------|--|------------------------------|-----------------------|
| Stream of images for Live Preview | DG_CONTROL / DAT_CAPABILITY All MSG_* | CAP_CAMERAPREVIEWUI | 1.8 |

AUTOMATIC CAPTURE

| When source supports: | Must respond to: | Mandatory capability: | Version intro: |
|------------------------------|--|---|-----------------------|
| Automatic capture | DG_CONTROL / DAT_CAPABILITY All MSG_* | CAP_AUTOMATICCAPTURE CAP_TIMEBEFOREFIRSTCAPTURE CAP_TIMEBETWEENCAPTURES | 1.8 1.8 1.8 |