TWAIN Local Specification:

mDNS and DNS-SD

(DRAFT COPY)

November 30th 2016
Revision 0.5

This is a draft copy of the proposed TWAIN Local Specification: mDNS and DNS-SD. Its contents may be added to, changed or deleted at any time.

History

Date	Version	Comment
June 1st, 2016	0.01	Initial draft.
June 28th, 2016	0.02	Switching to the already publically release privet 1.0, to see how that looks
August 24th, 2016	0.03	Changed the title, change _scanner to _twaindirect, and the device type to twaindirect
September 21st, 2016	0.04	Changes to the service advertisement, and fixed txtvers to be plural
November 30th, 2016	0.05	Added the simple _privet._tcp records, updated the non-goals

Notes

Notes
• (none)

Contents

Glossary of Terms

This section establishes the meaning of words used within the Specification.

Word	Meaning
client	The browser or native application that discovers and communicates with a scanner.
communication manager	An entity that supports advertising available scanners and a how to communicate with them.
scanner	Any physical or virtual device that captures images for a client.
user	The person in control of a client and a scanner.

References

This section lists standards, guides and resources that are cited in this document.

Word	Meaning
Avahi	A system facilitating service discovery on a local area network http://avahi.org
Base64	Refer to 5.2 Base64 Content-Transfer-Encoding http://www.w3.org/Protocols/rfc1341/5_Content-Transfer-Encoding.html
Bonjour	A system facilitating service discovery on a local area network https://www.apple.support/bonjour
DNS-SD	DNS Service Discovery https://tools.ietf.org/html/rfc6763
mDNS	Multicast DNS https://tools.ietf.org/html/rfc6762
Privet	A Local Discovery API https://developers.google.com/cloud-print/docs/privet
TWAIN DIrect Sample Code	Website for TWAIN Direct sample code **TBD**
TWAIN Direct	Website for TWAIN Direct http://twaindirect.org

Overview

Summary

Please refer to the *TWAIN Direct Specification: 01 - User's Guide* in the section *Learning about TWAIN Direct* for an overview of the layout of these documents and the best order to read them.

This document describes how a client finds a scanner on a Local Area Network without requiring the support of a DNS server, obtaining the address and port number needed to use the *TWAIN Direct Client-Scanner API*. It describes how a scanner advertises itself using mDNS and DNS-SD.

Communication Managers

Under TWAIN Direct a Communication Manager (CM) is an entity that advertises connection information about one or more scanners to a client. Some CMs may require an authentication and a registration process. All CMs define a protocol for communication between a client and a scanner. Network CMs use RESTful APIs, which are described in another document.

There are two classes of CMs: cloud servers, which manage scanners across a Wide Area Network (WAN), and CMs located inside of a scanner, such as is described in this document, which advertise at the level of a Local Area Network (LAN).

Both scanners and applications may support multiple CMs.

Non-goals

- TWAIN Direct does not describe how to pair a scanner with a client. This includes the mechanism used to add the scanner to the client's network. In the opinion of the TWAIN Working Group there is still considerable vendor innovation in this area, and it's premature for TWAIN to recommend the use of any one method. Pairing is how a client safely and securely recognizes a scanner and establishes a trusted connection with it on a network.

- TWAIN Direct does not describe how to establish a user's proximity to a scanner. In the opinion of the TWAIN Working Group there is still considerable vendor innovation in this area, and it's premature for TWAIN to recommend the use of any one method. Proximity is the ability to recognize a user's physical presence at a scanner, and is needed to

allow for safe and secure image capture of documents.

- There is no simple or universal support for javascript access to mDNS across all browsers. Clients must either use browsers that natively support it or install plugins.

- The use of Google's Privet 1.0 protocol does not imply or require any future cloud solution using Google's technology, such as that used in Google Cloud Print. Please refer to the documentation on TWAIN Cloud for more information.

Zero Configuration Scanner Enumeration

All modern platforms, both desktop and mobile offer libraries for zero configuration device discovery. TWAIN Direct devices on a LAN are found using Multicast DNS (mDNS) and DNS Service Discovery (DNS-SD). Refer to the References section for detailed information on these standards. What follows are the items specific to TWAIN Local communication.

mDNS Records

The scanner must advertise the following mDNS records. The value of <name> must be universally unique, not just unique to a specific LAN:

Name	Type	Description
<name>._privet._tcp.local <name>\._twaindirect\._sub._privet._tcp.local	PTR	Advertises the TWAIN Direct service. Applications will look for _privet._tcp.
<name>._privet._tcp.local <name>\._twaindirect\._sub._privet._tcp.local	SRV	Service record to find the local hostname, and the port for this service on this scanner. The name is the friendly name of the scanner, and should be universally unique.
<name>._privet._tcp.local <name>\._twaindirect\._sub._privet._tcp.local	TXT	Metadata about the scanner. The name is the friendly name of the scanner, and should be universally unique.
<local hostname>	A	Provides the IPv4 address for the scanner.

The scanner may advertise and make discoverable the following mDNS records:

Name	Type	Description
<local hostname>	AAAA	Provides the IPv6 address for the scanner.

mDNS TXT record

mDNS supports a text record that consists of <key>=<value> pairs, with all text preceding the equal sign ('=') considered part of the key. All keys listed below are mandatory, unless otherwise indicated.

There is currently no cloud presence for scanners. Therefore the supported TXT records are limited to those items necessary for LAN support, or required by Google Privet v1.0.

Key	Value	Description
txtvers	1	Must be 1 for this specification. Must be the first key/value pair in the TXT record. ex: txtvers=1
ty	<name>	User readable friendly name for the scanner. ex: ty=Company Scanner Model ABC
type	<subtypes list>	Command separated names for all subtypes offered by this scanner. ex: type=twaindirect
id	<id>	The id is only filled in if it's registered in the cloud, if it's not registered the field is present, but it has no value. ex: id=
cs	offline	offline - the scanner is only available on the LAN ex: cd=offline
https	1 or 0	Set to 1 (the default) if the scanner requires secure communication with HTTPS.
note (optional)	<description>	User friendly description of the scanner, which can be used for things like indicating its location. If present, the user can modify this value in their scanner. ex: note=Scanner by column N58