

Internet Draft  
<[draft-ietf-ips-fcip-slp-00.txt](#)>  
Expires February 2001

David Peterson  
Cisco

August 2001

## Finding FCIP Entities Using SLP

### Status of this Memo

This document is an Internet-Draft and is in full conformance with all provisions of [Section 10 of RFC2026](#).

Internet-Drafts are working documents of the Internet Engineering Task Force (IETF), its areas, and its working groups. Note that other groups may also distribute working documents as Internet-Drafts.

Internet-Drafts are draft documents valid for a maximum of six months and may be updated, replaced, or obsoleted by other documents at any time. It is inappropriate to use Internet-Drafts as reference material or to cite them other than as "work in progress."

The list of current Internet-Drafts can be accessed at <http://www.ietf.org/ietf/lid-abstracts.txt>

The list of Internet-Draft Shadow Directories can be accessed at <http://www.ietf.org/shadow.html>.

### Copyright Notice

Copyright (C) The Internet Society (2001). All Rights Reserved.

### Abstract

The FCIP protocol provides a method for the tunneling of Fibre Channel frames over an IP network. This document defines the use of the Service Location Protocol by FCIP entities to discover one another, and provides the appropriate SLPv2 templates describing their services.

### 1. Acknowledgements

This draft was produced by the FCIP discovery team, including Todd Sperry (Adaptec), Larry Lamars (SanValley), Robert Snively (Brocade),

Internet Draft

FCIP and SLP

August 2001

Ravi Natarajan (Lightsand), Anil Rijhsinghani (McData), and Venkat Rangan (Rhapsody Networks). Thanks also to Mark Bakke (Cisco) for initial help and consultation.

## [2.](#) Introduction

FCIP is a protocol provides a method for the tunneling of Fibre Channel frames over an IP network. This document defines the use of the Service Location Protocol (SLPv2) by FCIP entities to discover one another, and provides the appropriate SLPv2 templates describing their services.

## [3.](#) Notation Conventions

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in [[RFC2119](#)].

## [4.](#) Terminology

Here are some definitions that may aid readers that are unfamiliar with either SLP, SCSI, or iSCSI. Some of these definitions have been reproduced from [[RFC2608](#)] and "Finding an RSIP Server with SLP" [[RSIP](#)].

User Agent (UA)	A process working on the client's behalf to establish contact with some service. The UA retrieves service information from the Service Agents or Directory Agents.
-----------------	--

Service Agent (SA)	A process working on behalf of one or more services to advertise the services and their capabilities.
--------------------	---

Directory Agent (DA)	A process which collects service advertisements. There can only be one DA present per given host.
----------------------	---

Scope	A named set of services, typically making up a logical administrative group.
-------	--

Service Advertisement	A URL, attributes, and a lifetime (indicating how long the advertisement is valid), providing service access information and capabilities description
-----------------------	---

Peterson

[Page 2]

---

Internet Draft

FCIP and SLP

August 2001

for a particular service.

FCIP Entity

The principle FCIP interface point to the IP network.

FCIP Entity Name

The world wide name of the switch if the FCIP Entity resides in a switch or the world wide node name of the associated Nx\_Port.

FCIP Discovery Domain

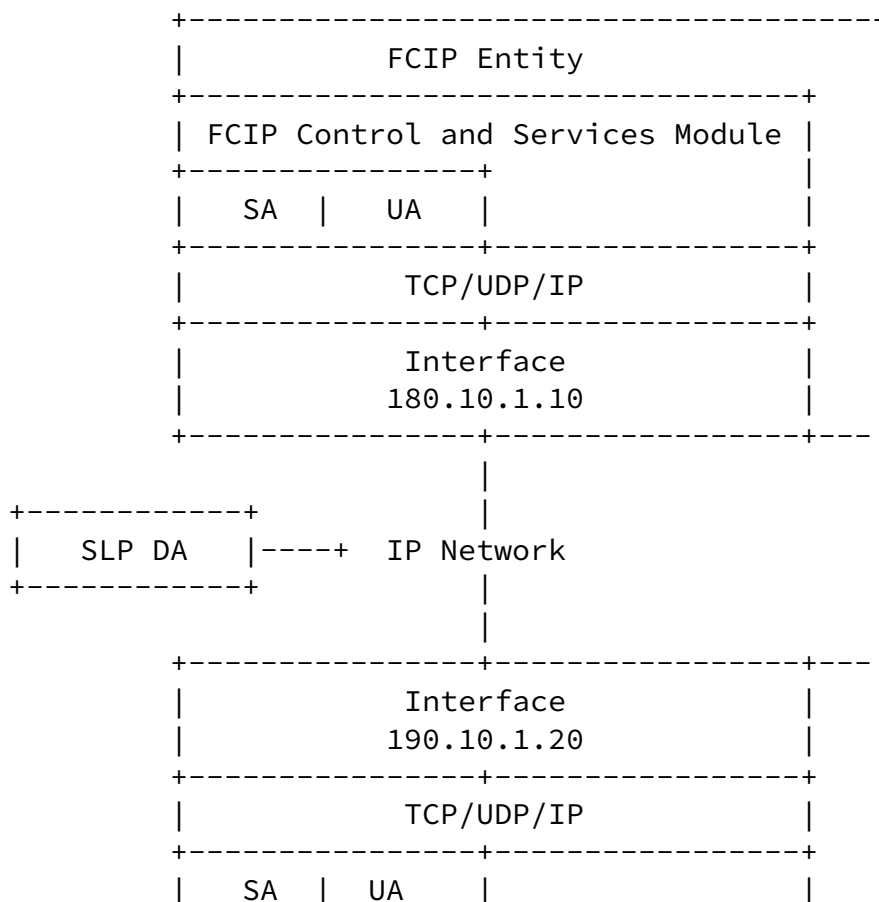
The FCIP Discovery Domain specifies which FCIP Entities are allowed to connect within the bounds of the scope.

## [5.](#) Using SLP for FCIP Service Discovery

At least two FCIP Entities must be involved in the entity discovery process. The end result is that an FCIP Entity will discover one or more peer FCIP Entities.

### [5.1.](#) Discovering FCIP Entities using SLP

The following example diagram shows the relationship between FCIP Entities and their associated SLP agents.



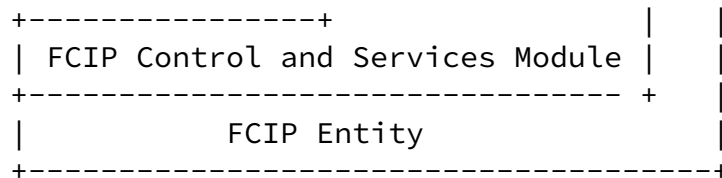


Fig. 1 FCIP Entity and SLP Agent Relationship.

As indicated in the above drawing above, each FCIP Entity contains an FCIP Control and Services Module that interfaces to an SLPv2 SA and UA.

The SA constructs a service advertisement of the type "service:fcip:entity" for each of the service URLs it wishes to register. The service advertisement contains a lifetime, along with other attributes defined in the service template.

The remainder of the discovery process is identical to that used by any client/server pair implementing SLPv2:

1. If an SLPv2 DA is found, the SA contacts the DA and registers the service advertisement. If no DA is found, the SA maintains the service advertisement itself, answering multicast UA queries directly.

2. When the FCIP Entity requires contact information for a peer FCIP Entity, the UA either contacts the DA using unicast or the SA using multicast. The UA includes a query based on the attributes to indicate the characteristics of the FCIP Entities it requires.

3. Once the UA has the IP address and port number of the FCIP Entity it may begin the normal connection procedure to the FCIP Entity.

The use of a DA is recommended for SLP operation in an FCIP environment.

## 6. FCIP SLPv2 Templates

Two templates are provided: an FCIP Entity template, and an abstract template to provide a means to add other FCIP related templates in the future.

### [6.1.](#) The FCIP Abstract Service Type Template

This template defines the abstract service "service:fcip". It is used as a top-level service to encapsulate all other FCIP related services.

Name of submitter: David Peterson

Language of service template: en

Security Considerations:

See the security considerations of the concrete service type.

Template Text:

-----template begins here-----

template-type=fcip

template-version=0.1

template-description=

This is an abstract service type. The purpose of the fcip service type is to encompass all of the services used to support the FCIP protocol.

template-url-syntax =

url-path= ; Depends on the concrete service type.

-----template ends here-----

### [6.2.](#) The FCIP Entity Concrete Service Type Template

This template defines the service "service:fcip:entity". A device containing FCIP Entities that wishes to have them discovered via SLPv2 would register each of them, with each of their addresses, as this service type.

FCIP Entities wishing to discover other FCIP Entities in this manner will generally use one of the following query strings:

1. Find a specific FCIP Entity, given its FCIP Entity Name:

Service: service:fcip:entity  
Scope: fcip-entity-scope-list  
Query: (fcip-entity-name=10:00:00:60:69:20:34:0C)

2. Find all of the FCIP Entities within a specified FCIP Discovery Domain:

Service: service:fcip:entity  
Scope: fcip-entity-scope-list  
Query: (fcip-discovery-domain=fcip-discovery-domain-name)

3. In addition, a management application may wish to discover all FCIP Entities:

Service: service:fcip:entity  
Scope: management-service-scope-list  
Query: none

Name of submitter: David Peterson  
Language of service template: en  
Security Considerations:  
See later section.

Template Text:

-----template begins here-----  
template-type=fcip:entity

template-version=0.1

template-description=

This is a concrete service type. The fcip:entity service type is used to register individual FCIP Entity addresses to be discovered by others.

UAs will generally search for these by including one of the following:

- the FCIP Entity Name for which an address is needed
- the FCIP Discovery Domain Name for which addresses are requested
- the service URL

template-url-syntax =

url-path = ipaddr [ : tcpport ] / fcip-entity-name

ipaddr = DNS host name or ip address

```

tcpport          =    decimal tcp port number
fcip-entity-name =    FCIP Entity Name
#
# The fcip-entity-name portion of the URL is required and must be the
# FCIP Entity Name of the entity being registered.
# An entity representing multiple endpoints must register each of them
# using SLPv2.
#
# Examples:
# service:fcip:entity://hammer.cisco.com:4000/10:00:00:60:69:20:34:0C
# service:fcip:entity://192.1.3.40:4000/10:00:00:60:69:20:34:0C
#

fcip-entity-name = opaque L
# This must match the fcip-entity-name specified in the url-path.
# The fcip-entity-name is either the Fibre Channel Switch Name if the
# FCIP Entity is embedded in a switch or the Fibre Channel Node Name
# if the FCIP Entity is not embedded in a switch (e.g, an Nx_Port).

fabric-name = opaque 0 L
# The fabric-name is the World Wide Name of the principal switch.

switch-name = opaque 0 L
# A name identifier associated with a Fibre Channel switch or bridge device
# Refer to FC-SW-2 for further information.

node-name = opaque 0 L
# A name identifier associated with a Fibre Channel node.
# Refer to FC-FS for a description of a Fibre Channel node.

transports = string M L
tcp
# This is a list of transport protocols that the registered entity
# supports. FCIP is currently supported over TCP only.
tcp

mgmt=entity = string 0
# The FQDN of the management interface of the FCIP Entity.

mgmt-ipaddr = string 0

```

# The IP address of the management interface appropriate for SNMP,



```
# web-based, or telnet management of the FCIP Entity.

fcip-discovery-domain = string M
# The fcip-discovery-domain string contains the name(s) of the FCIP
# discovery domain(s) to which this FCIP Entity belongs.

-----template ends here-----
```

## 7. Security Considerations

Service type templates provide information that is used to interpret information obtained by clients through SLP. If the FCIP templates are modified or if false templates are distributed, FCIP Entities may not correctly register themselves or may not be able to interpret service information.

SLP provides an authentication mechanism for UAs to assure that service advertisements only come from trusted SAs. [[RFC2608](#)] If trust is an issue, particularly with the information sought by the client about IPsec and IKE support, then SLP authentication should be enabled in the network.

Once an FCIP Entity is discovered, authentication and authorization are handled by the FCIP protocol. It is the responsibility of the providers of these services to ensure that an inappropriately advertised or discovered service does not compromise their security.

## 8. Summary

This document describes how SLPv2 can be used by FCIP Entities to find other FCIP Entities. Service type templates for FCIP Entities are presented.

## 9. References

- [RFC2608] E. Guttman, C. Perkins, J. Veizades, M. Day. Service Location Protocol, version 2 [RFC 2608](#), July 1999.
- [RFC2609] E. Guttman, C. Perkins, J. Kempf. Service Templates and service: Schemes [RFC 2609](#), July 1999.
- [RFC2614] J. Kempf, E. Guttman. An API for Service Location [RFC 2614](#), June 1999.

- [RFC2119] S. Bradner. Key Words for Use in RFCs to Indicate Requirement Levels. [RFC 2119](#), March 1997.
- [RFC3082] J. Kempf, J Goldschmidt. Notification and Subscription for SLP. [RFC 3082](#), March 2001.
- [FCIP] Rajagopal, et. al. "FCIP", [draft-ietf-ips-fcovertcpip-05.txt](#), August 2001.
- [RSIP] Kempf, J., Montenegro, G., "Finding an RSIP Server with SLP", [draft-ietf-nat-rsip-slp-00](#), February 2000.

Author's Address:

David Peterson  
Cisco Systems, Inc.  
6450 Wedgwood Road  
Maple Grove, MN  
USA 55311

Voice: +1 763-398-1007  
E-Mail: [dap@cisco.com](mailto:dap@cisco.com)

Full Copyright Statement

Copyright (C) The Internet Society (2001). All Rights Reserved.

This document and translations of it may be copied and furnished to others, and derivative works that comment on or otherwise explain it or assist in its implementation may be prepared, copied, published and distributed, in whole or in part, without restriction of any kind, provided that the above copyright notice and this paragraph are included on all such copies and derivative works. However, this document itself may not be modified in any way, such as by removing the copyright notice or references to the Internet Society or other Internet organizations, except as needed for the purpose of developing Internet standards in which case the procedures for copyrights defined in the Internet Standards process must be followed, or as required to translate it into languages other than English.

The limited permissions granted above are perpetual and will not be revoked by the Internet Society or its successors or assigns.

This document and the information contained herein is provided on an "AS IS" basis and THE INTERNET SOCIETY AND THE INTERNET ENGINEERING

TASK FORCE DISCLAIMS ALL WARRANTIES, EXPRESS OR IMPLIED, INCLUDING  
BUT NOT LIMITED TO ANY WARRANTY THAT THE USE OF THE INFORMATION

Peterson

[Page 9]

---

Internet Draft

FCIP and SLP

August 2001

HEREIN WILL NOT INFRINGE ANY RIGHTS OR ANY IMPLIED WARRANTIES OF  
MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

#### Acknowledgement

Funding for the RFC Editor function is currently provided by the  
Internet Society.

