Document Number: DSP1016

Date: 2009-06-22

Version: 1.0.0

Telnet Service Profile

Document Type: Specification

Document Status: DMTF Standard

Document Language: E

CONTENTS

Figures

Tables

Foreword

The *Telnet Service Profile* (DSP1016) was prepared by the Server Management Working Group and the Physical Platform Profiles Working Group of the DMTF.

DMTF is a not-for-profit association of industry members dedicated to promoting enterprise and systems management and interoperability.

Acknowledgments

The authors wish to acknowledge the following people.

Editor:

- Aaron Merkin – IBM

Contributors:

- Jon Hass – Dell
- Khachatur Papanyan – Dell
- Enoch Suen – Dell
- Jeff Hilland – HP
- Christina Shaw – HP
- Perry Vincent – Intel
- John Leung – Intel

Introduction

The information in this specification should be sufficient for a provider or consumer of this data to identify unambiguously the classes, properties, methods, and values that shall be instantiated and manipulated to represent and manage a telnet service, its associated configuration information, and any active connections.

The target audience for this specification is implementers who are writing CIM-based providers or consumers of management interfaces that represent the component described in this document.

Telnet Service Profile

1 Scope

The *Telnet Service Profile* extends the management capability of referencing profiles by adding the capability to represent a telnet service and its associated sessions.

2 Normative References

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

2.1 Approved References

DMTF DSP0004, *CIM Infrastructure Specification 2.5*, http://www.dmtf.org/standards/published_documents/DSP0004_2.5.pdf

DMTF DSP0200, *CIM Operations over HTTP 1.3*, http://www.dmtf.org/standards/published_documents/DSP0200_1.3.pdf

DMTF DSP1001, *Management Profile Specification Usage Guide 1.0*, http://www.dmtf.org/standards/published_documents/DSP1001_1.0.pdf

DMTF DSP1033, *Profile Registration Profile 1.0*, http://www.dmtf.org/standards/published_documents/DSP1033_1.0.pdf

DMTF DSP1036, *IP Interface Profile 1.0,* http://www.dmtf.org/standards/published_documents/DSP1036_1.0.pdf

2.2 Other References

IETF RFC 1208, *A Glossary of Networking Terms*, March 1991, http://www.ietf.org/rfc/rfc1208.txt

ISO/IEC Directives, Part 2, *Rules for the structure and drafting of International Standards*, http://isotc.iso.org/livelink/livelink.exe?func=ll&objId=4230456&objAction=browse&sort=subtype

3 Terms and Definitions

For the purposes of this document, the terms and definitions given in DSP1033 and DSP1001 and the following apply.

3.1

can

used for statements of possibility and capability, whether material, physical, or causal

3.2

cannot

used for statements of possibility and capability, whether material, physical, or causal

3.3

conditional

indicates requirements to be followed strictly to conform to the document when the specified conditions are met

3.4

mandatory

indicates requirements to be followed strictly to conform to the document and from which no deviation is permitted

3.5

may

indicates a course of action permissible within the limits of the document

3.6

need not

indicates a course of action permissible within the limits of the document

3.7

optional

indicates a course of action permissible within the limits of the document

3.8

referencing profile

indicates a profile that owns the definition of this class and can include a reference to this profile in its “Referenced Profiles” table

3.9

shall

indicates requirements to be followed strictly to conform to the document and from which no deviation is permitted

3.10

shall not

indicates requirements to be followed strictly to conform to the document and from which no deviation is permitted

3.11

should

indicates that among several possibilities, one is recommended as particularly suitable, without mentioning or excluding others, or that a certain course of action is preferred but not necessarily required

3.12

should not

indicates that a certain possibility or course of action is deprecated but not prohibited

3.13

unspecified

indicates that this profile does not define any constraints for the referenced CIM element or operation

3.14

Listening Port

a TCP/IP port that the telnet service is bound to and listening for incoming connection requests

4 Symbols and Abbreviated Terms

The following abbreviations are used in this document.

4.1
CIM
Common Information Model

4.2
IP
Internet Protocol

4.3
TCP
Transmission Control Protocol

5 Synopsis

Profile Name: Telnet Service

Version: 1.0.0

Organization: DMTF

CIM Schema Version: 2.22

Central Class: CIM_ProtocolService

Scoping Class: CIM_ComputerSystem

The *Telnet Service Profile* extends the management capability of referencing profiles by adding the capability to represent a telnet service in a managed system. This profile includes a specification of the telnet service, its associated configuration, and any active sessions.

The Central Class for the *Telnet Service Profile* shall be the CIM_ProtocolService class. The Central Instance of the *Telnet Service Profile* shall be an instance of CIM_ProtocolService. The Scoping Class for the *Telnet Service Profile* shall be CIM_ComputerSystem. The Scoping Instance of the *Telnet Service Profile* shall be the instance of CIM_ComputerSystem to which the Central Instance is associated through an instance of CIM_HostedService.

Table 1 identifies profiles on which this profile has a dependency.

Table 1 – Referenced Profiles

Profile Name	Organization	Version	Relationship	Behavior
Profile Registration	DMTF	1.0	Mandatory	
IP Interface	DMTF	1.0	Optional	See 7.3.

6 Description

The *Telnet Service Profile* extends the management capability of referencing profiles by adding the capability to represent a telnet service hosted on a managed system. Functionality within the scope of this profile includes:

- representation of the telnet service
- representation of the Telnet server's view of active sessions

- configuration of the telnet service
- configuration of the telnet sessions from the Telnet server

Functionality that is explicitly excluded from the scope of this profile is modeling of the telnet session at the Telnet client.

Figure 1 represents the class schema for the *Telnet Service Profile*. For simplicity, the prefix CIM_ has been removed from the names of the classes.

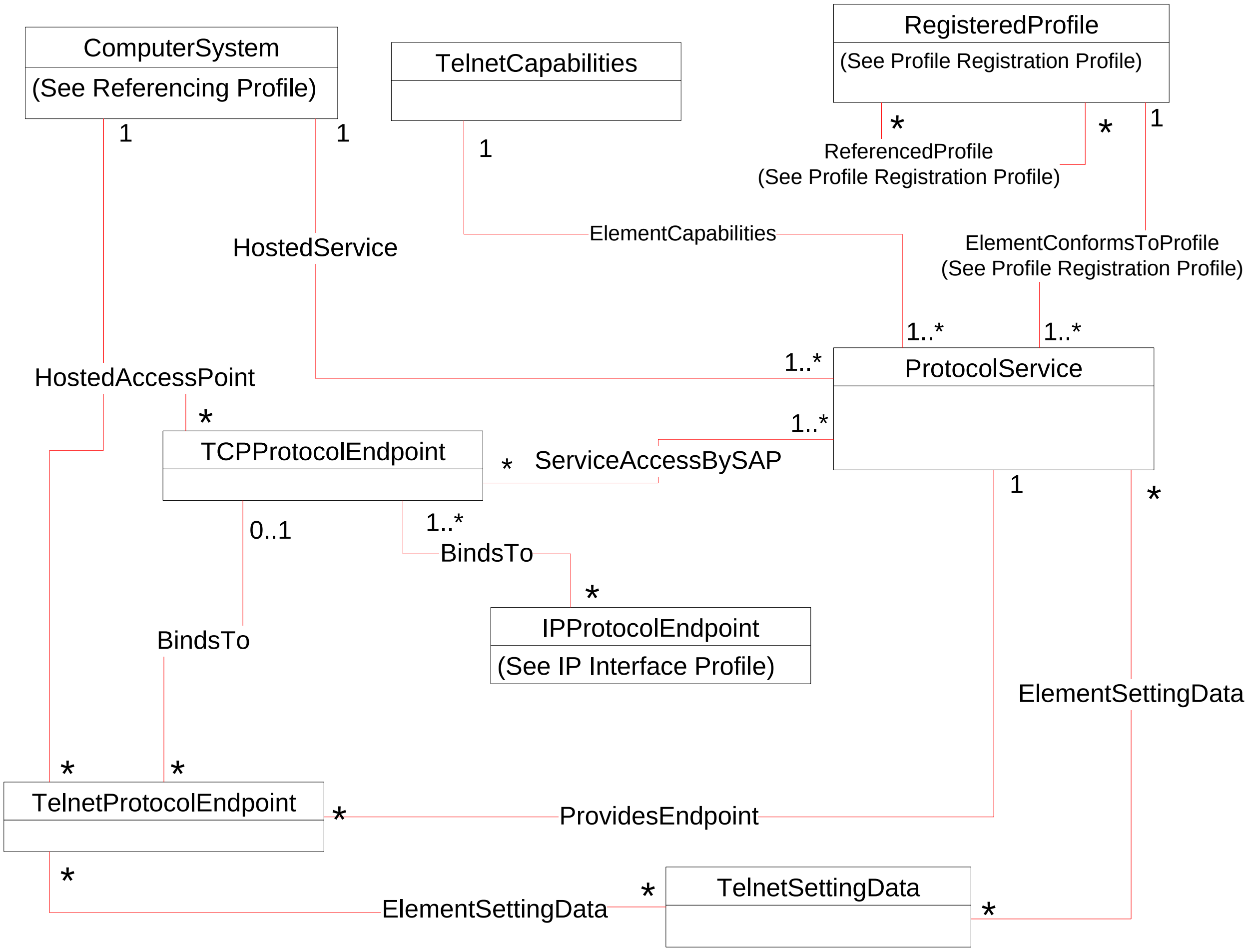


Figure 1 – Telnet Service Profile: Class Diagram

This profile represents the capabilities of the telnet service, the current configuration of the telnet service, the active sessions, and the default settings when new sessions are activated. The telnet service is represented by an instance of CIM_ProtocolService, where the Protocol property has the value 3 (Telnet). The capabilities of the telnet service are represented by an instance of CIM_TelnetCapabilities. The current configuration of the telnet service is modeled with the properties from the instance of CIM_ProtocolService. Each active session with the telnet service is represented by an instance of CIM_TelnetProtocolEndpoint. The current configuration of an active session is reflected in the values of the properties from the instance of CIM_TelnetProtocolEndpoint. CIM_TelnetSettingData represents a complete configuration that a telnet session could have. For example, an instance of CIM_TelnetSettingData contains the configuration that will be in effect for a telnet session when it is first established. CIM_TCPProtocolEndpoint is an optional endpoint used to model the TCP/IP ports over which a telnet service listens or a telnet session is active.

6.1 Telnet Session Lifecycle

When a telnet session is established with the telnet service, an instance of CIM_TelnetProtocolEndpoint is created. The CIM_TelnetProtocolEndpoint instance exists for the duration of the telnet session that it represents. When the telnet session ends, the CIM_TelnetProtocolEndpoint is removed. When the CIM_TelnetProtocolEndpoint is explicitly deleted through an intrinsic DeleteInstance operation, the telnet session ends.

7 Implementation Requirements

This section details the requirements related to the arrangement of instances and their properties for implementations of this profile.

7.1 Representing a Telnet Service

An instance of CIM_ProtocolService shall represent the telnet service being modeled.

7.1.1 Telnet Service State Management Is Supported — Conditional

This section describes the CIM elements and behaviors that shall be implemented when this behavior is supported.

7.1.1.1 General

When management of the state of a telnet service is supported, exactly one instance of CIM_TelnetCapabilities shall be associated with the CIM_ProtocolService instance through an instance of CIM_ElementCapabilities.

Support for managing the state of the telnet service is conditional behavior. For information about how a client can determine whether this behavior is supported, see 9.10. This behavior should be implemented when the telnet service can be enabled or disabled in its entirety.

7.1.1.2 CIM_TelnetCapabilities

When state management is supported, exactly one instance of CIM_TelnetCapabilities shall be associated with the CIM_ProtocolService instance through an instance of CIM_ElementCapabilities.

7.1.1.2.1 CIM_TelnetCapabilities.RequestedStatesSupported

The RequestedStatesSupported property may contain zero or more of the following values: 2 (Enabled), 3 (Disabled), or 11 (Reset).

7.1.1.3 CIM_ProtocolService.RequestedState

When the CIM_ProtocolService.RequestStateChange( ) method is successfully invoked, the value of the RequestedState property shall be the value of the RequestedState parameter. If the method is not successfully invoked, the value of the RequestedState property is indeterminate.

The CIM_ProtocolService.RequestedState property shall have one of the values specified in the CIM_TelnetCapabilities.RequestedStatesSupported property or a value of 5 (No Change).

7.1.1.4 CIM_ProtocolService.EnabledState

When the RequestedState parameter has a value of 2 (Enabled) or 3 (Disabled) and the CIM_ProtocolService.RequestStateChange( ) method completes successfully, the value of the EnabledState property shall equal the value of the CIM_ProtocolService.RequestedState property.

If the method does not complete successfully, the value of the EnabledState property is indeterminate.

The EnabledState property shall have the value 2 (Enabled), 3 (Disabled), or 6 (Enabled but Offline).

7.1.2 Telnet Service State Management Is Not Supported

This section describes the CIM elements and behaviors that shall be implemented when management of the telnet service state is not supported.

7.1.2.1 CIM_TelnetCapabilities

When state management is not supported, exactly one instance of CIM_TelnetCapabilities may be associated with the CIM_ProtocolService instance through an instance of CIM_ElementCapabilities.

7.1.2.1.1 CIM_TelnetCapabilities.RequestedStatesSupported

The CIM_TelnetCapabilities.RequestedStatesSupported property shall not contain any values.

7.1.2.2 CIM_ProtocolService.RequestedState

The RequestedState property shall have the value 12 (Not Applicable).

7.1.2.3 CIM_ProtocolService.EnabledState

The EnabledState property shall have one of the following values: 2 (Enabled), 3 (Disabled), or 5 (Not Applicable).

7.1.3 Modifying ElementName Is Supported—Conditional

The CIM_ProtocolService.ElementName property may support being modified by the ModifyInstance operation (see 8.9.1). This behavior is conditional. For information about how a client can determine whether it is supported, see 9.8.

This section describes the CIM elements and behavior requirements when an implementation supports client modification of the CIM_ProtocolService.ElementName property.

7.1.3.1 CIM_TelnetCapabilities

An instance of CIM_TelnetCapabilities shall be associated with the CIM_ProtocolService instance through an instance of CIM_ElementCapabilities.

7.1.3.1.1 CIM_TelnetCapabilities.ElementNameEditSupported

The ElementNameEditSupported property shall have a value of TRUE when the implementation supports client modification of the CIM_ProtocolService.ElementName property.

7.1.3.1.2 CIM_EnabledLogicalElement.MaxElementNameLen

The MaxElementNameLen property shall be implemented.

7.1.4 Modifying ElementName Is Not Supported

This section describes the CIM elements and behaviors that shall be implemented when the CIM_ProtocolService.ElementName does not support being modified by the ModifyInstance operation.

7.1.4.1 CIM_TelnetCapabilities

An instance of CIM_TelnetCapabilities may be associated with the CIM_ProtocolService instance through an instance of CIM_ElementCapabilities.

7.1.4.1.1 CIM_TelnetCapabilities.ElementNameEditSupported

The ElementNameEditSupported property shall have a value of FALSE when the implementation does not support client modification of the CIM_ProtocolService.ElementName property.

7.1.4.1.2 CIM_EnabledLogicalElement.MaxElementNameLen

The MaxElementNameLen property may be implemented. The MaxElementNameLen property is irrelevant in this context.

7.1.5 Default Configuration of the Service

The default configuration is the configuration of the service when it was first installed on the managed system. When an implementation exposes the default configuration, the default configuration shall be represented by an instance of CIM_TelnetSettingData associated with the CIM_ProtocolService through an instance of CIM_ElementSettingData, where the IsDefault property of the CIM_ElementSettingData instance has a value of 1 (Is Default).

7.1.5.1 Listening Port

An implementation may model one or more listening ports of the telnet service. When the implementation models the listening ports, the following requirements apply.

7.1.5.1.1 CIM_TCPProtocolEndpoint

For each TCP/IP port to which the telnet service is bound, there shall be an instance of CIM_TCPProtocolEndpoint in which the PortNumber property of the instance indicates the TCP/IP port number to which the telnet service is listening.

7.1.5.1.2 Relationship to the Telnet Service

For each CIM_TCPProtocolEndpoint instance, an instance of CIM_ServiceAccessBySAP shall associate the CIM_ProtocolService instance with the CIM_TCPProtocolEndpoint instance.

7.1.5.2 Managing Listening Ports

The implementation may support managing the ports on which the telnet service listens. This behavior is optional. The ListenOnPort( ) method (see 8.1) of the CIM_ProtocolService class can be used to add ports on which the telnet service will listen. Using the DeleteInstance intrinsic operation to delete an instance of CIM_TCPProtocolEndpoint will stop the telnet service from listening on the represented port (see 8.15.2).

7.2 Representing the Server's View of a Telnet Session

Each active session with the telnet service shall be represented by an instance of CIM_TelnetProtocolEndpoint.

7.2.1 Relationship with Service

An instance of CIM_ProvidesEndpoint shall associate the CIM_ProtocolService with the CIM_TelnetProtocolEndpoint.

7.2.2 Port for Session

An implementation may model the TCP/IP port to which the telnet session is bound. This behavior is optional. When the implementation models the TCP/IP port, the following requirements apply.

7.2.2.1 CIM_TCPProtocolEndpoint

When the TCP/IP port to which the telnet session is bound is modeled, the TCP/IP port shall be modeled using an instance of CIM_TCPProtocolEndpoint.

7.2.2.2 Relationship to Session

An instance of CIM_BindsTo shall associate the CIM_TelnetProtocolEndpoint instance with the CIM_TCPProtocolEndpoint.

7.2.3 Session Default Configuration

When a telnet session is created, it will have an initial configuration. Implementations can indicate to clients the configuration that will be assigned to a session. Implementations can also indicate to clients the configuration that an active session had when the session was first established.

7.2.3.1 Configuration That Will Be Assigned

An implementation may assign the same initial configuration for all telnet sessions that are spawned. When the implementation assigns the same initial configuration for all telnet sessions, the configuration that a session will have when it is established shall be represented by an instance of CIM_TelnetSettingData that is associated with the instance of CIM_ProtocolService through an instance of CIM_ElementSettingData, where the IsNext property of the CIM_ElementSettingData instance has a value of 1 (Is Next).

7.2.3.2 Initial Configuration of a Session

The initial configuration of a session may be modeled. This behavior is optional. When the configuration that a session had when it was established is modeled, it shall be represented by an instance of CIM_TelnetSettingData that is associated with the instance of CIM_TelnetProtocolEndpoint through an instance of CIM_ElementSettingData, where the IsCurrent property of the CIM_ElementSettingData instance has a value of 1 (Is Current).

A discrete instance of CIM_TelnetSettingData is not required for each active session. The instance of CIM_TelnetSettingData that is associated with the instance of CIM_TelnetProtocolEndpoint needs only to accurately reflect the initial configuration of the session.

7.3 Relationship with IP Interfaces (Optional)

This section details requirements for specifying the relationship between the telnet session or service and one or more IP interfaces of the system.

7.3.1 Modeling the IP Interface over Which a Session Was Established

When the specific port for a telnet session is modeled, the specific IP interface over which the session is active may be modeled. This behavior is optional. When the implementation models the specific interface over which a telnet session is active, there shall be an instance of the CIM_BindsTo association where the value of the Antecedent property shall be a reference to the CIM_IPProtocolEndpoint instance and the value of the Dependent property shall be a reference to the CIM_TCPProtocolEndpoint instance.

7.3.2 Modeling the IP Interfaces for the Service

When the specific port for a telnet session or service is modeled, the specific IP interface over which the session is active may be modeled. This behavior is optional. When the implementation models the specific interface over which a telnet session is active, there shall be an instance of the CIM_BindsTo association where the value of the Antecedent property shall be a reference to the CIM_IPProtocolEndpoint instance and the value of the Dependent property shall be a reference to the CIM_TCPProtocolEndpoint instance. When the CIM_TCPProtocolEndpoint is not associated with one or more instances of CIM_IPProtocolEndpoint through an instance of CIM_BindsTo, the telnet service accepts connections over all the IP interfaces of the system.

8 Methods

This section details the requirements for supporting intrinsic operations and extrinsic methods for the CIM elements defined by this profile.

8.1 CIM_ProtocolService.ListenOnPort( ) (Optional)

The CIM_ProtocolService.ListenOnPort( ) method shall be supported when the ListeningPortManagement property of the associated instance of CIM_TelnetCapabilities has a value of TRUE. When the value of the ListeningPortManagement property is FALSE, the CIM_ProtocolService.ListenOnPort( ) method shall not be supported.

The CIM_ProtocolService.ListenOnPort( ) method is used to configure additional ports on which the CIM_ProtocolService instance will listen. Detailed requirements of the ListenOnPort( ) method are specified in Table 2 and Table 3.

No standard messages are defined.

Table 2 – CIM_ProtocolService.ListenOnPort( ) Method: Return Code Values

Value	Description
0	Request was successfully executed.
1	Method is unsupported in the implementation.
2	Error occurred
0x1000	Job started: REF returned to started CIM_ConcreteJob

Table 3 – CIM_ProtocolService.ListenOnPort( ) Method: Parameters

Qualifiers	Name	Type	Description/Values
IN	IPEndpoint	CIM_IPProtocolEndpoint REF	Optional reference to the specific CIM_IPProtocolEndpoint instance to which the created CIM_TCPProtocolEndpoint instance will be bound
OUT	Job	CIM_TCPProtocolEndpoint REF	CIM_TCPProtocolEndpoint instance that is created if the method is successful
IN, REQ	PortNumber	uint16	Desired port number for the service to listen on

When the method completes successfully, the implementation shall create an instance of CIM_TCPProtocolEndpoint. The value of the PortNumber property of the instance of CIM_TCPProtocolEndpoint shall be the value of the PortNumber parameter of the method invocation. The implementation shall create an instance of CIM_ServiceAccessBySAP that references the instance of CIM_TCPProtocolEndpoint and references the instance of CIM_ProtocolService on which the method was invoked.

The IPEndpoint parameter for the method is optional. The implementation shall perform the following actions when the IPEndpoint parameter is not specified:

- The implementation shall create an instance of CIM_HostedAccessPoint that references the newly created CIM_TCPProtocolEndpoint instance and the instance of CIM_ComputerSystem with which the CIM_ProtocolService instance is associated through an instance of CIM_HostedService (the scoping system).

- For each instance of CIM_IPProtocolEndpoint that is associated through an instance of CIM_HostedAccessPoint with the CIM_ComputerSystem instance with which the instance of CIM_ProtocolService on which this method was invoked is associated through an instance of CIM_HostedService, the implementation shall create an instance of the CIM_BindsTo association where the value of the Antecedent property shall be a reference to the CIM_IPProtocolEndpoint instance and the value of the Dependent property shall be a reference to the CIM_TCPProtocolEndpoint instance.

The implementation shall perform the following actions when the IPEndpoint parameter is specified:

- The implementation shall create an instance of CIM_HostedAccessPoint that references the newly created CIM_TCPProtocolEndpoint instance and the instance of CIM_ComputerSystem with which the CIM_IPProtocolEndpoint instance is associated through an instance of CIM_HostedAccessPoint.
- The implementation shall create an instance of the CIM_BindsTo association where the value of the Antecedent property shall be a reference to the CIM_IPProtocolEndpoint instance and the value of the Dependent property shall be a reference to the CIM_TCPProtocolEndpoint instance.

8.2 CIM_ProtocolService.RequestStateChange( )

Invocation of the CIM_ProtocolService.RequestStateChange( ) method will change the element's state to the value specified in the RequestedState parameter. The Enabled and Disabled values of the RequestedState parameter correspond to enabling or disabling the functionality represented by the instance of CIM_ProtocolService. A value of 2 (Enabled) shall correspond to a request to enable the functionality. A value of 3 (Disabled) shall correspond to a request to disable the functionality. A value of 11 (Reset) shall initiate a reset of the telnet service.

See 7.1.1.3 for information about the effect of this method on the RequestedState property.

The method shall be considered successful if the availability of the functionality upon completion of the method corresponds to the desired availability indicated by the RequestedState parameter. An actual change in state does not need to occur for the method to be considered successful. It is sufficient that the resultant state be equal to the requested state. Upon successful completion of the method, the Return Value shall be zero.

See 7.1.1.4 for information about the effect of this method on the EnabledState property.

Detailed requirements of the RequestStateChange( ) method are specified in Table 4 and Table 5.

No standard messages are defined.

Invoking the CIM_ProtocolService.RequestStateChange( ) method multiple times could result in earlier requests being overwritten or lost.

Table 4 – CIM_ProtocolService.RequestStateChange( ) Method: Return Code Values

Value	Description
0	Request was successfully executed.
1	Method is unsupported in the implementation.
2	Error occurred
0x1000	Job started: REF returned to started CIM_ConcreteJob

Table 5 – CIM_ProtocolService.RequestStateChange( ) Method: Parameters

Qualifiers	Name	Type	Description/Values
IN, REQ	RequestedState	uint16	Valid state values: 2 (Enabled) 3 (Disabled) 11 (Reset)
OUT	Job	CIM_ConcreteJob REF	Returned if job started
IN, REQ	TimeoutPeriod	datetime	Client specified maximum amount of time that the transition to a new state is supposed to take: 0 or NULL – No time requirements <interval> – Maximum time allowed

8.2.1 CIM_ProtocolService.RequestStateChange( ) ConditionalSupport

Support for the RequestStateChange( ) method is conditional on the indication of support for at least one value for the RequestedState parameter as advertised through the RequestedStatesSupported property of an associated instance of CIM_EnabledLogicalElementCapabilities. When the CIM_EnabledLogicalElementCapabilities.RequestedStatesSupported property contains at least one value, the CIM_ProtocolService.RequestStateChange( ) method shall be implemented and supported. The CIM_ProtocolService.RequestStateChange( ) method shall not return a value of 1 (Unsupported).

8.3 Profile Conventions for Operations

For each profile class (including associations), the implementation requirements for operations, including those in the following default list, are specified in class-specific subclauses of this clause.

The default list of operations is as follows:

- GetInstance
- Associators
- AssociatorNames
- References
- ReferenceNames
- EnumerateInstances
- EnumerateInstanceNames

8.4 CIM_BindsTo

Table 6 lists implementation requirements for operations. If implemented, these operations shall be implemented as defined in DSP0200. In addition, and unless otherwise stated in Table 6, all operations in the default list in 8.3 shall be implemented as defined in DSP0200.

NOTE: Related profiles may define additional requirements on operations for the profile class.

Table 6 – Operations: CIM_BindsTo

Operation	Requirement	Messages
Associators	Unspecified	None
AssociatorNames	Unspecified	None
References	Unspecified	None
ReferenceNames	Unspecified	None

8.5 CIM_ElementCapabilities

Table 7 lists implementation requirements for operations. If implemented, these operations shall be implemented as defined in DSP0200. In addition, and unless otherwise stated in Table 7, all operations in the default list in 8.3 shall be implemented as defined in DSP0200.

NOTE: Related profiles may define additional requirements on operations for the profile class.

Table 7 – Operations: CIM_ElementCapabilities

Operation	Requirement	Messages
Associators	Unspecified	None
AssociatorNames	Unspecified	None
References	Unspecified	None
ReferenceNames	Unspecified	None

8.6 CIM_ElementSettingData

Table 8 lists implementation requirements for operations. If implemented, these operations shall be implemented as defined in DSP0200. In addition, and unless otherwise stated in Table 8, all operations in the default list in 8.3 shall be implemented as defined in DSP0200.

NOTE: Related profiles may define additional requirements on operations for the profile class.

Table 8 – Operations: CIM_ElementSettingData

Operation	Requirement	Messages
ModifyInstance	Optional	See 8.6.1.
Associators	Unspecified	None
AssociatorNames	Unspecified	None
References	Unspecified	None
ReferenceNames	Unspecified	None

8.6.1 CIM_ElementSettingData — ModifyInstance

When an instance of CIM_ElementSettingData associates an instance of CIM_TelnetSettingData with an instance of CIM_TelnetProtocolEndpoint, the following rules shall govern the behavior of the ModifyInstance operation:

- The ModifyInstance operation shall not allow the IsDefault property to be modified.
- The ModifyInstance operation shall not allow the IsCurrent property to be modified.
- When the ModifyInstance operation is used to modify the IsNext property to a value of 1 (Is Next), the ModifyInstance operation shall implement the following behavior:

- The ModifyInstance operation shall find all other instances of CIM_ElementSettingData that associate a CIM_TelnetSettingData instance with the CIM_TelnetProtocolEndpoint instance referenced by the target instance of CIM_ElementSettingData.
- For each instance of CIM_ElementSettingData found, the ModifyInstance operation shall modify the value of its IsNext property to a value of 2 (Is Not Next).

8.7 CIM_HostedAccessPoint

Table 9 lists implementation requirements for operations. If implemented, these operations shall be implemented as defined in DSP0200. In addition, and unless otherwise stated in Table 9, all operations in the default list in 8.3 shall be implemented as defined in DSP0200.

NOTE: Related profiles may define additional requirements on operations for the profile class.

Table 9 – Operations: CIM_HostedAccessPoint

Operation	Requirement	Messages
Associators	Unspecified	None
AssociatorNames	Unspecified	None
References	Unspecified	None
ReferenceNames	Unspecified	None

8.8 CIM_HostedService

Table 10 lists implementation requirements for operations. If implemented, these operations shall be implemented as defined in DSP0200. In addition, and unless otherwise stated in Table 10, all operations in the default list in 8.3 shall be implemented as defined in DSP0200.

NOTE: Related profiles may define additional requirements on operations for the profile class.

Table 10 – Operations: CIM_HostedService

Operation	Requirement	Messages
Associators	Unspecified	None
AssociatorNames	Unspecified	None
References	Unspecified	None
ReferenceNames	Unspecified	None

8.9 CIM_ProtocolService

Table 11 lists implementation requirements for operations. If implemented, these operations shall be implemented as defined in DSP0200. In addition, and unless otherwise stated in Table 11, all operations in the default list in 8.3 shall be implemented as defined in DSP0200.

NOTE: Related profiles may define additional requirements on operations for the profile class.

Table 11 – Operations: CIM_ProtocolService

Operation	Requirement	Messages
ModifyInstance	Optional. See 8.9.1.	None

8.9.1 CIM_ProtocolService — ModifyInstance

When the ElementNameEditSupported property of the CIM_TelnetCapabilities instance has a value of TRUE, the ModifyInstance operation shall allow the value of the ElementName property of the CIM_ProtocolService instance to be modified. The ModifyInstance operation shall enforce the length restriction specified in the MaxElementNameLen property of the CIM_TelnetCapabilities instance.

When the ElementNameEditSupported property of the CIM_TelnetCapabilities has a value of FALSE, the ModifyInstance operation shall not change the value of the ElementName property of the CIM_ProtocolService instance.

8.10 CIM_ProvidesEndpoint

Table 12 lists implementation requirements for operations. If implemented, these operations shall be implemented as defined in DSP0200. In addition, and unless otherwise stated in Table 12, all operations in the default list in 8.3 shall be implemented as defined in DSP0200.

NOTE: Related profiles may define additional requirements on operations for the profile class.

Table 12 – Operations: CIM_ProvidesEndpoint

Operation	Requirement	Messages
Associators	Unspecified	None
AssociatorNames	Unspecified	None
References	Unspecified	None
ReferenceNames	Unspecified	None

8.11 CIM_ServiceAccessBySAP

Table 13 lists implementation requirements for operations. If implemented, these operations shall be implemented as defined in DSP0200. In addition, and unless otherwise stated in Table 13, all operations in the default list in 8.3 shall be implemented as defined in DSP0200.

NOTE: Related profiles may define additional requirements on operations for the profile class.

Table 13 – Operations: CIM_ServiceAccessBySAP

Operation	Requirement	Messages
Associators	Unspecified	None
AssociatorNames	Unspecified	None
References	Unspecified	None
ReferenceNames	Unspecified	None

8.12 CIM_TelnetCapabilities

All operations in the default list in 8.3 shall be implemented as defined in DSP0200.

NOTE: Related profiles may define additional requirements on operations for the profile class.

8.13 CIM_TelnetSettingData

Table 14 lists implementation requirements for operations. If implemented, these operations shall be implemented as defined in DSP0200. In addition, and unless otherwise stated in Table 14, all operations in the default list in 8.3 shall be implemented as defined in DSP0200.

NOTE: Related profiles may define additional requirements on operations for the profile class.

Table 14 – Operations: CIM_TelnetSettingData

Operation	Requirement	Messages
ModifyInstance	Optional. See 8.13.1.	None

8.13.1 CIM_TelnetSettingData — ModifyInstance

When the CIM_TelnetSettingData instance is associated with the CIM_ProtocolService instance through an instance of CIM_ElementSettingData and the value of the IsDefault property of the CIM_ElementSettingData instance has a value of 1 (Is Default), the ModifyInstance operation shall not be supported.

When the CIM_TelnetSettingData instance is not associated with an instance of CIM_ProtocolService through an instance of CIM_ElementSettingData where the IsDefault property has a value of 1 (Is Default), the ModifyInstance operation may be supported for the CIM_TelnetSettingData instance.

8.14 CIM_TelnetProtocolEndpoint

Table 15 lists implementation requirements for operations. If implemented, these operations shall be implemented as defined in DSP0200. In addition, and unless otherwise stated in Table 15, all operations in the default list in 8.3 shall be implemented as defined in DSP0200.

NOTE: Related profiles may define additional requirements on operations for the profile class.

Table 15 – Operations: CIM_TelnetProtocolEndpoint

Operation	Requirement	Messages
ModifyInstance	Optional. See 8.14.1.	None
DeleteInstance	Optional. See 8.14.2.	None

8.14.1 ModifyInstance

The ModifyInstance operation may be supported for an instance of CIM_TelnetProtocolEndpoint. When the ModifyInstance operation is supported for an instance of CIM_TelnetProtocolEndpoint, the ModifyInstance operation shall not modify the following properties:

- NameFormat
- ProtocolIFType
- OtherTypeDescription

8.14.2 DeleteInstance

The DeleteInstance operation may be supported for instances of CIM_TelnetProtocolEndpoint. When the DeleteInstance operation is invoked against an instance, the corresponding telnet session shall be terminated prior to deleting the CIM_TelnetProtocolEndpoint instance. The implementation shall also remove any association instances that reference the CIM_TelnetProtocolEndpoint.

8.15 CIM_TCPProtocolEndpoint

Table 16 lists implementation requirements for operations. If implemented, these operations shall be implemented as defined in DSP0200. In addition, and unless otherwise stated in Table 16, all operations in the default list in 8.3 shall be implemented as defined in DSP0200.

NOTE: Related profiles may define additional requirements on operations for the profile class.

Table 16 – Operations: CIM_TCPProtocolEndpoint

Operation	Requirement	Messages
ModifyInstance	Optional. See 8.15.1.	None
DeleteInstance	Optional. See 8.15.2.	None

8.15.1 ModifyInstance

The ModifyInstance operation may be supported for an instance of CIM_TCPProtocolEndpoint. When the ModifyInstance operation is supported for an instance of CIM_TCPProtocolEndpoint, the ModifyInstance operation shall not modify the following properties:

- NameFormat
- ProtocolIFType
- PortNumber

8.15.2 DeleteInstance

When the CIM_ProtocolService.ListenOnPort( ) method is supported for the instance of CIM_ProtocolService with which the CIM_TCPProtocolEndpoint is associated through an instance of CIM_ServiceAccessBySAP, the DeleteInstance operation shall be supported for the instance of CIM_TCPProtocolEndpoint. When the CIM_ProtocolService.ListenOnPort( ) method is not supported, the DeleteInstance operation shall not be supported.

When the DeleteInstance operation is successful for an instance of CIM_TCPProtocolEndpoint, the telnet service shall stop listening on the TCP/IP port indicated by the PortNumber property of the CIM_TCPProtocolEndpoint. The implementation shall also remove any association instances that reference the CIM_TCPProtocolEndpoint.

9 Use Cases

This section contains object diagrams and use cases for the *Telnet Service Profile*.

9.1 Object Diagrams

The object diagram in Figure 2 shows how instances of CIM_RegisteredProfile are used to identify the version of the *Telnet Service Profile* with which an instance of CIM_ProtocolService and its associated instances are conformant. An instance of CIM_RegisteredProfile exists for each profile that is instrumented in the system. One instance of CIM_RegisteredProfile identifies the “DMTF Base Server Profile version 1.0.0”. The other instance identifies the “DMTF Telnet Service Profile version 1.0.0”. The CIM_ProtocolService instance is scoped to an instance of CIM_ComputerSystem. This instance of CIM_ComputerSystem is conformant with the DMTF Base Server Profile version 1.0.0 as indicated by the CIM_ElementConformsToProfile association to the CIM_RegisteredProfile instance. The CIM_ProtocolService instance is conformant with this profile as indicated by the CIM_ElementConformsToProfile association between the instance and the instance of CIM_RegisteredProfile that identifies this profile.

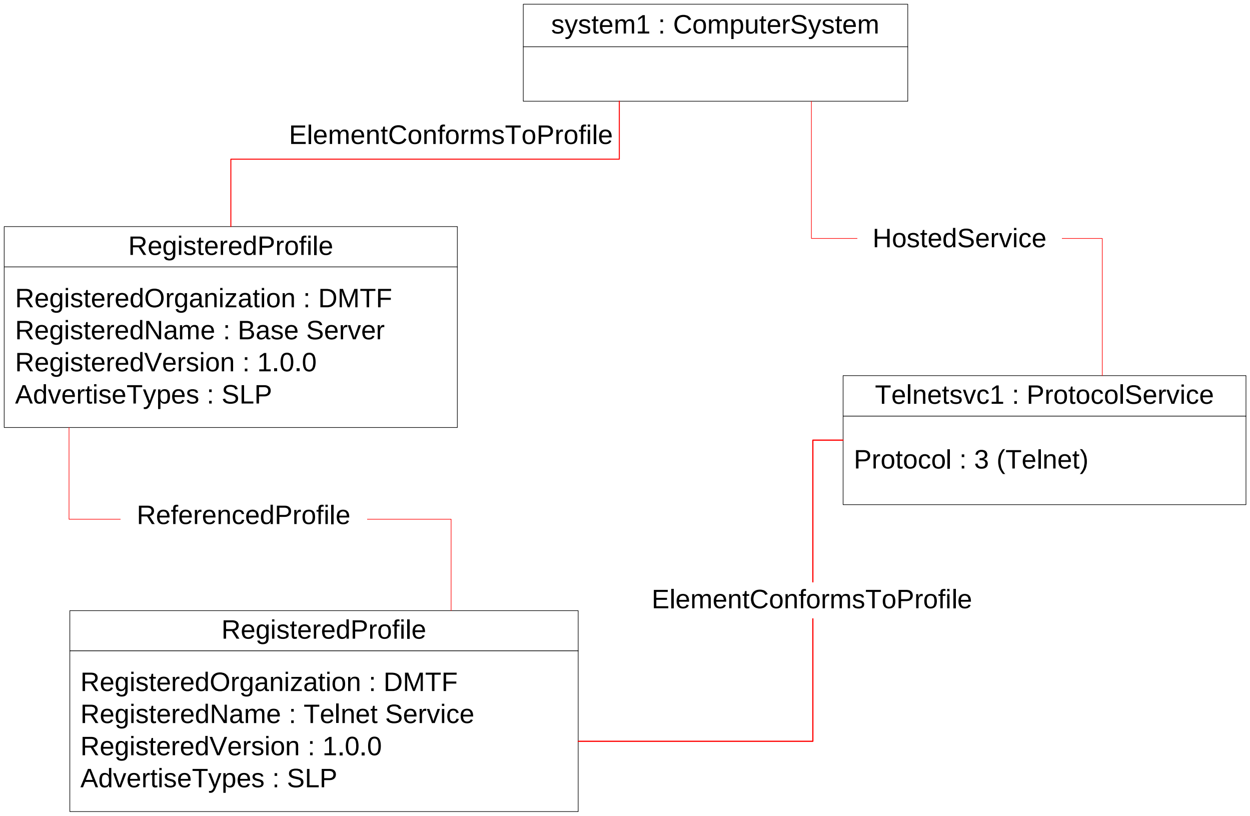


Figure 2 – Registered Profile

Figure 3 through Figure 5 illustrate the sequence of the telnet service listening for connections, a telnet session being established, and the configuration of the telnet session changing from the initial values.

Figure 3 is an object diagram that shows the telnet service enabled and listening for incoming connections. The instance of CIM_TelnetSettingData labeled Telnetsettings2 indicates the settings that will be applied to a telnet session when it is established. The instance of CIM_TelnetSettingData labeled Telnetsettings1 represents the default configuration for a session. The CIM_TelnetCapabilities instance indicates the capabilities of the telnet service and its associated sessions. In this example, the telnet service supports the ANSI and VT100 terminal modes, as indicated by the value of the SupportedTerminalModes property. However, the administrator has configured the service to enable sessions using only VT100. This configuration is indicated by the value of the EnabledTerminalModes property of the associated CIM_TelnetSettingData instances.

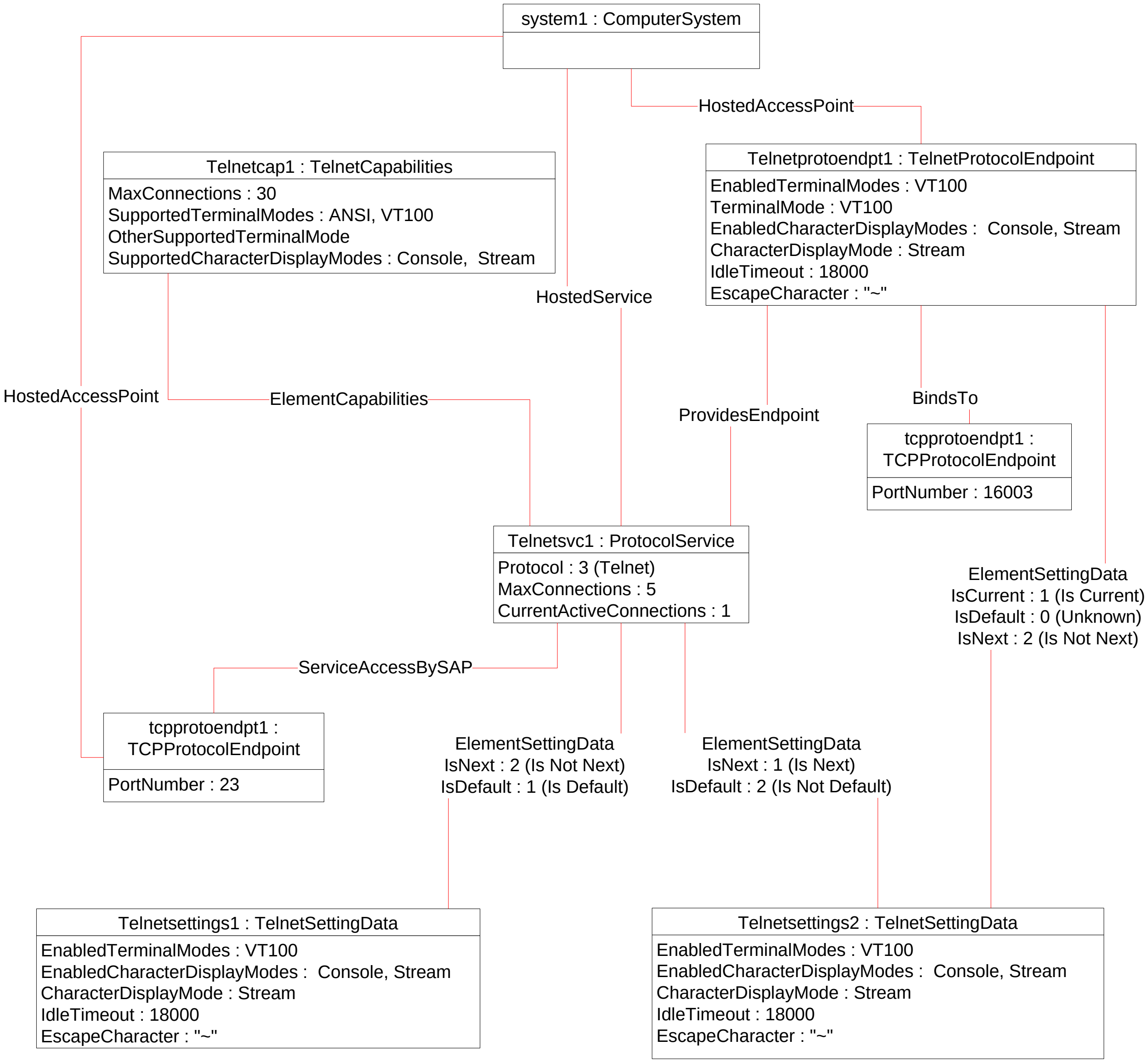

system1 : ComputerSystem
HostedAccessPoint
Telnetprotoendpt1 : TelnetProtocolEndpoint
EnabledTerminalModes : VT100
TerminalMode : VT100
EnabledCharacterDisplayModes : Console, Stream
CharacterDisplayMode : Stream
IdleTimeout : 18000
EscapeCharacter : "~"
Telnetcap1 : TelnetCapabilities
MaxConnections : 30
SupportedTerminalModes : ANSI, VT100
OtherSupportedTerminalMode
SupportedCharacterDisplayModes : Console, Stream
HostedService
HostedAccessPoint
ElementCapabilities
ProvidesEndpoint
BindsTo
tcpprotoendpt1 : TCPProtocolEndpoint
PortNumber : 16003
Telnetsvc1 : ProtocolService
Protocol : 3 (Telnet)
MaxConnections : 5
CurrentActiveConnections : 1
ElementSettingData
IsCurrent : 1 (Is Current)
IsDefault : 0 (Unknown)
IsNext : 2 (Is Not Next)
ServiceAccessBySAP
tcpprotoendpt1 : TCPProtocolEndpoint
PortNumber : 23
ElementSettingData
IsNext : 2 (Is Not Next)
IsDefault : 1 (Is Default)
ElementSettingData
IsNext : 1 (Is Next)
IsDefault : 2 (Is Not Default)
Telnetsettings1 : TelnetSettingData
EnabledTerminalModes : VT100
EnabledCharacterDisplayModes : Console, Stream
CharacterDisplayMode : Stream
IdleTimeout : 18000
EscapeCharacter : "~"
Telnetsettings2 : TelnetSettingData
EnabledTerminalModes : VT100
EnabledCharacterDisplayModes : Console, Stream
CharacterDisplayMode : Stream
IdleTimeout : 18000
EscapeCharacter : "~"

Figure 3 – Telnet Service Listening for Connections

The object diagram in Figure 4 represents the same configuration as Figure 3 with the addition of an instance of CIM_TelnetProtocolEndpoint representing a newly established session. Notice that the value of the CurrentActiveConnections property of the CIM_ProtocolService instance (Telnetsvc1) has been incremented to reflect that a session is active. The values of the properties for the established session (Telnetprotoendpt1) correspond to the values of the instance of CIM_TelnetSettingData, where the value of the IsNext property on the CIM_ElementSettingData instance that associates the settings with the service has a value of 1 (Is Next).

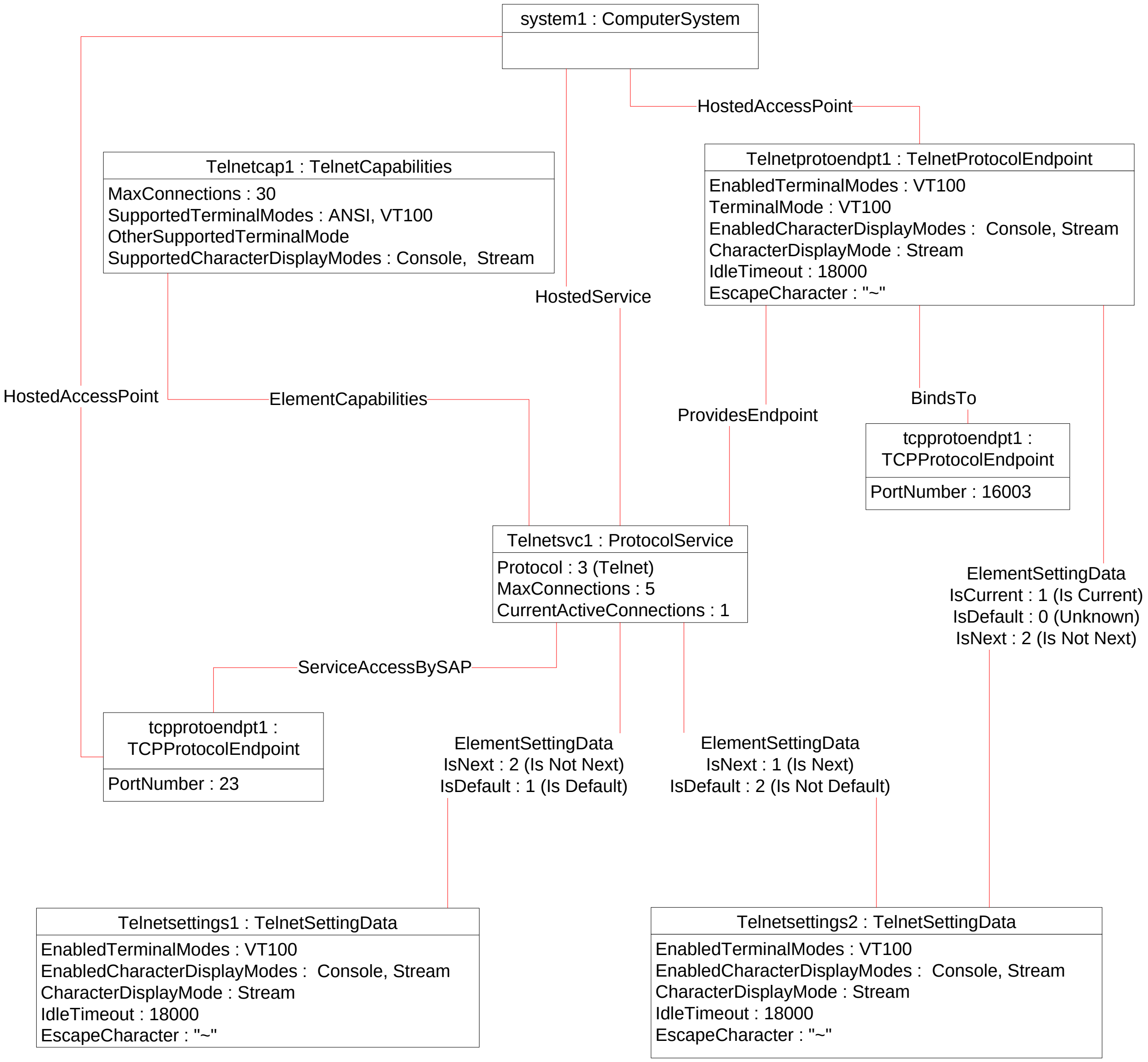
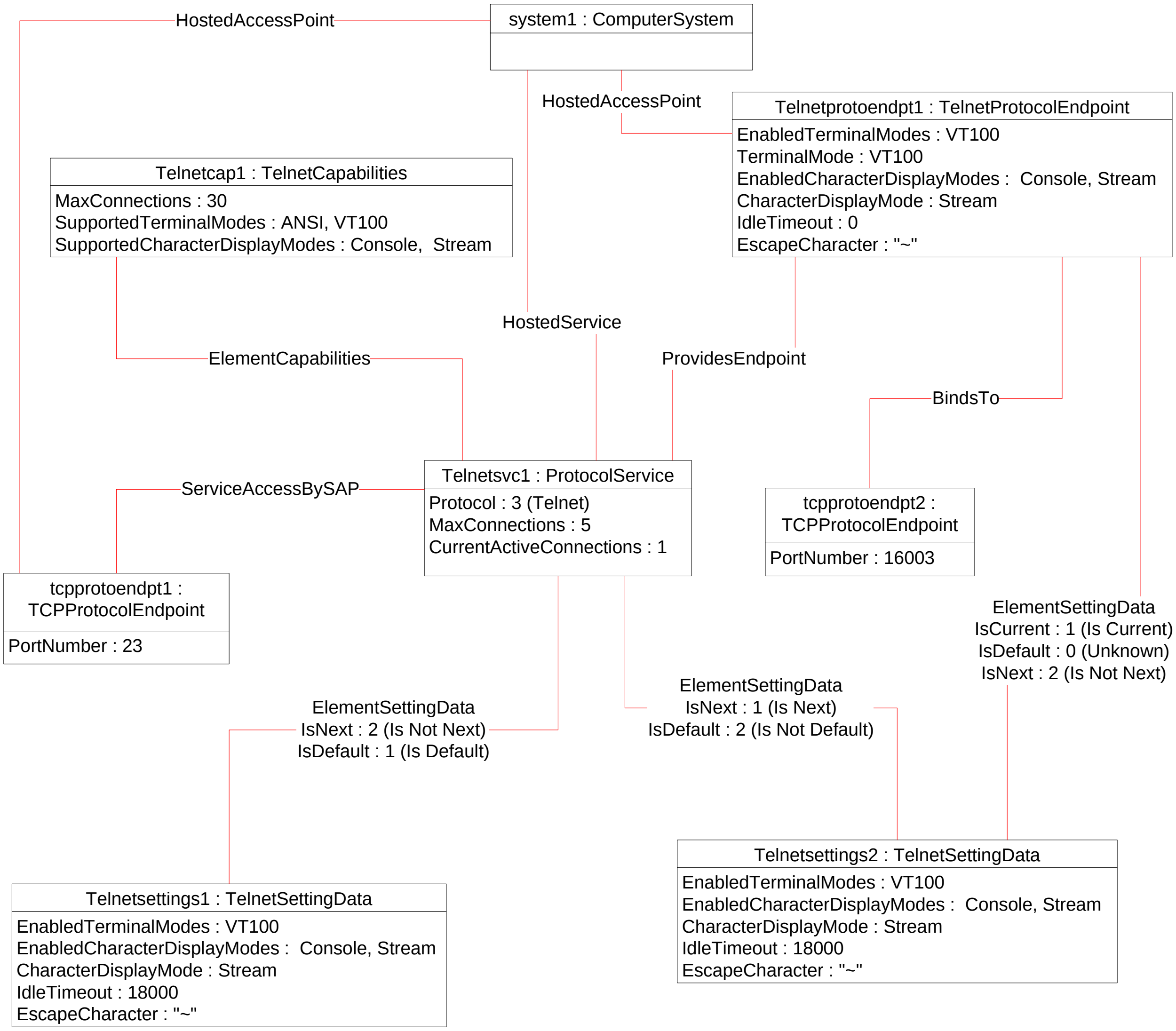

system1 : ComputerSystem
HostedAccessPoint
Telnetcap1 : TelnetCapabilities
MaxConnections : 30
SupportedTerminalModes : ANSI, VT100
OtherSupportedTerminalMode
SupportedCharacterDisplayModes : Console, Stream
Telnetprotoendpt1 : TelnetProtocolEndpoint
EnabledTerminalModes : VT100
TerminalMode : VT100
EnabledCharacterDisplayModes : Console, Stream
CharacterDisplayMode : Stream
IdleTimeout : 18000
EscapeCharacter : "~"
HostedService
HostedAccessPoint
ElementCapabilities
ProvidesEndpoint
BindsTo
tcpprotoendpt1 : TCPProtocolEndpoint
PortNumber : 16003
Telnetsvc1 : ProtocolService
Protocol : 3 (Telnet)
MaxConnections : 5
CurrentActiveConnections : 1
ElementSettingData
IsCurrent : 1 (Is Current)
IsDefault : 0 (Unknown)
IsNext : 2 (Is Not Next)
ServiceAccessBySAP
tcpprotoendpt1 : TCPProtocolEndpoint
PortNumber : 23
ElementSettingData
IsNext : 2 (Is Not Next)
IsDefault : 1 (Is Default)
ElementSettingData
IsNext : 1 (Is Next)
IsDefault : 2 (Is Not Default)
Telnetsettings1 : TelnetSettingData
EnabledTerminalModes : VT100
EnabledCharacterDisplayModes : Console, Stream
CharacterDisplayMode : Stream
IdleTimeout : 18000
EscapeCharacter : "~"
Telnetsettings2 : TelnetSettingData
EnabledTerminalModes : VT100
EnabledCharacterDisplayModes : Console, Stream
CharacterDisplayMode : Stream
IdleTimeout : 18000
EscapeCharacter : "~"

Figure 4 – One Active Session

686 The object diagram in Figure 5 represents the same configuration as in Figure 4 except that the user has
687 changed session parameters from the values that were in effect when the session was initially
688 established. The user has changed the character display mode from stream to console. This change is
689 reflected in the value of the CharacterDisplayMode property of Telnetprotoendpt1 because the
690 CIM_TelnetProtocolEndpoint contains the actual values for the session. Notice that the value of the
691 CharacterDisplayMode property of Telnetsettings2 remains unchanged.

692 
HostedAccessPoint
system1 : ComputerSystem
HostedAccessPoint
Telnetprotoendpt1 : TelnetProtocolEndpoint
EnabledTerminalModes : VT100
TerminalMode : VT100
EnabledCharacterDisplayModes : Console, Stream
CharacterDisplayMode : Stream
IdleTimeout : 0
EscapeCharacter : "~"
Telnetcap1 : TelnetCapabilities
MaxConnections : 30
SupportedTerminalModes : ANSI, VT100
SupportedCharacterDisplayModes : Console, Stream
HostedService
ElementCapabilities
ProvidesEndpoint
BindsTo
ServiceAccessBySAP
Telnetsvc1 : ProtocolService
Protocol : 3 (Telnet)
MaxConnections : 5
CurrentActiveConnections : 1
tcpprotoendpt2 : TCPProtocolEndpoint
PortNumber : 16003
tcpprotoendpt1 : TCPProtocolEndpoint
PortNumber : 23
ElementSettingData
IsCurrent : 1 (Is Current)
IsDefault : 0 (Unknown)
IsNext : 2 (Is Not Next)
ElementSettingData
IsNext : 1 (Is Next)
IsDefault : 2 (Is Not Default)
ElementSettingData
IsNext : 2 (Is Not Next)
IsDefault : 1 (Is Default)
Telnetsettings2 : TelnetSettingData
EnabledTerminalModes : VT100
EnabledCharacterDisplayModes : Console, Stream
CharacterDisplayMode : Stream
IdleTimeout : 18000
EscapeCharacter : "~"
Telnetsettings1 : TelnetSettingData
EnabledTerminalModes : VT100
EnabledCharacterDisplayModes : Console, Stream
CharacterDisplayMode : Stream
IdleTimeout : 18000
EscapeCharacter : "~"

693 **Figure 5 – Session Changed**

9.2 Configuring Session Default Settings

When a telnet session is established, session settings have default values. A client can change the default values for subsequent sessions' settings as follows:

1) Find the instance of CIM_ElementSettingData that associates an instance of CIM_TelnetSettingData with the CIM_ProtocolService, where the value of its IsNext property is 1 (Is Next) and the value of the IsDefault property is not 1 (Is Default).

2) Modify the properties of the referenced CIM_TelnetSettingData instance.

9.3 Modifying Active Session Settings

A client can find the active sessions for a telnet service and modify their configuration as follows:

1) Find an instance of CIM_TelnetProtocolEndpoint that is associated with the CIM_ProtocolService through an instance of CIM_ProvidesEndpoint.

2) Modify the properties of the CIM_TelnetProtocolEndpoint as needed.

9.4 Disabling the Telnet Service

If an implementation supports disabling the telnet service, a client can disable the telnet service by invoking the RequestStateChange( ) method on CIM_ProtocolService instance with a value of Disabled for the RequestedState parameter.

9.5 Determining the Telnet Service Capabilities

A client can determine the capabilities of the telnet service as follows:

1) Find the instance of CIM_TelnetCapabilities associated with the CIM_ProtocolService through an instance of CIM_ElementCapabilities.

2) View the properties of the CIM_TelnetCapabilities instance to see the supported function.

9.6 Determining the Listening Ports of the Telnet Service

An implementation can model the TCP/IP port upon which the telnet service listens for incoming connection requests. When the implementation models the port, a client can determine the ports to which the telnet service is bound as follows:

1) Find all instances of CIM_TCPProtocolEndpoint that are associated with the CIM_ProtocolService through an instance of CIM_ServiceAccessBySAP.

2) For each instance of CIM_TCPProtocolEndpoint, query the PortNumber property.

Applying this query to Figure 6, the client would find a single instance of CIM_TCPProtocolEndpoint and the value of the PortNumber property is 22.

Figure 6 is an object diagram for the telnet service listening on TCP/IP port 22 for incoming connection requests across all of the IP interfaces of the host system. This is illustrated by the instances of CIM_BindsTo that associate the instance of CIM_TCPProtocolEndpoint with the instances of CIM_IPProtocolEndpoint.

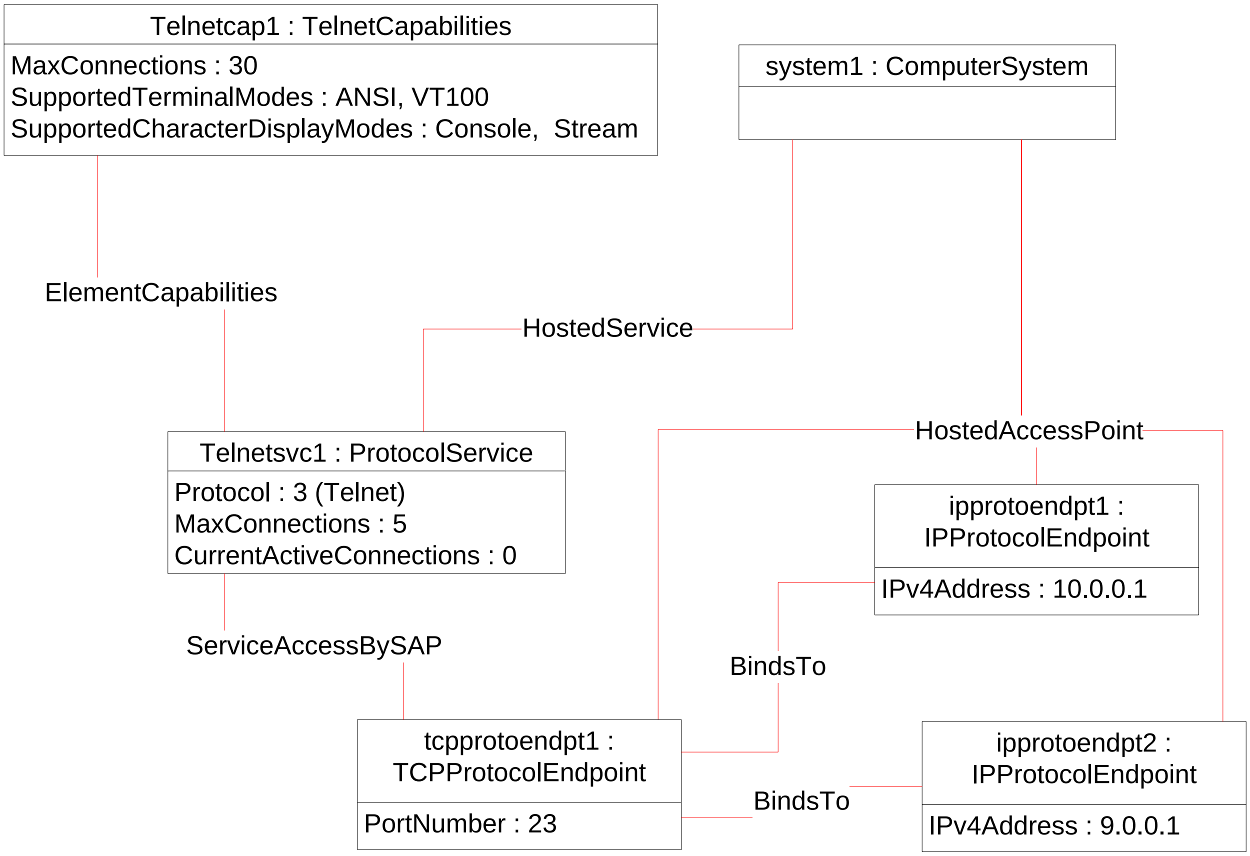

Telnetcap1 : TelnetCapabilities
MaxConnections : 30
SupportedTerminalModes : ANSI, VT100
SupportedCharacterDisplayModes : Console, Stream
system1 : ComputerSystem
ElementCapabilities
HostedService
HostedAccessPoint
Telnetsvc1 : ProtocolService
Protocol : 3 (Telnet)
MaxConnections : 5
CurrentActiveConnections : 0
ipprotoendpt1 : IPProtocolEndpoint
IPv4Address : 10.0.0.1
ServiceAccessBySAP
BindsTo
tcpprotoendpt1 : TCPProtocolEndpoint
PortNumber : 23
BindsTo
ipprotoendpt2 : IPProtocolEndpoint
IPv4Address : 9.0.0.1

Figure 6 – Listening on a Single Port on All Interfaces

9.7 Adding a Listening Port for the Telnet Service

An implementation can support adding and removing bindings between the telnet service and TCP/IP ports. When an implementation supports adding bindings, a client can configure the service to listen on all interfaces or a specific interface.

To have the telnet service listen on a port across all IP interfaces of the system, the client can invoke the ListenOnPort( ) method of the CIM_ProtocolService instance, specifying the appropriate PortNumber. To have the telnet service listen on a port for a specific interface, the client can invoke the ListenOnPort( ) method of the CIM_ProtocolService instance, specifying a reference to the CIM_IPProtocolEndpoint instance that represents the specific IP interface.

Figure 7 reflects the preceding algorithm applied to the configuration represented in Figure 6, where the ListenOnPort( ) method was invoked with the IPEndpoint parameter containing a reference to ipprotoendpt2 and a PortNumber parameter of 1700. The instance tcpprotoendpt2 is created and associated with ipprotoendpt2.

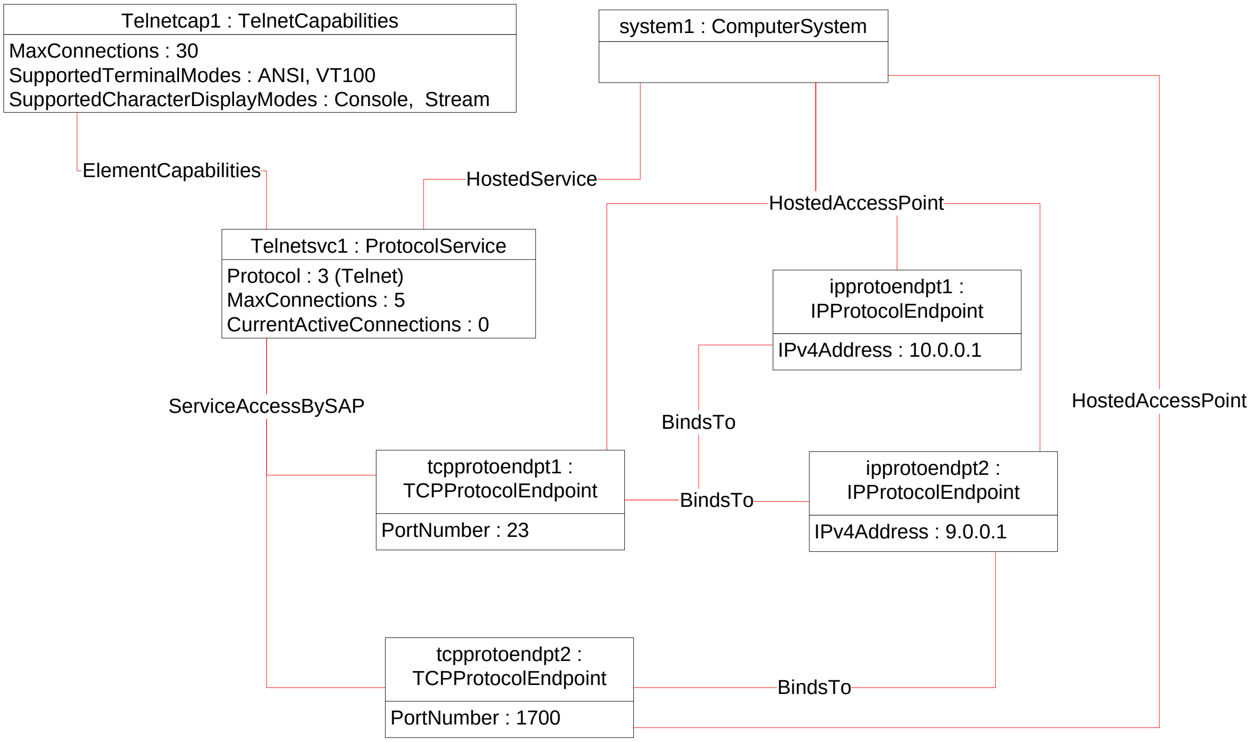

Telnetcap1 : TelnetCapabilities
MaxConnections : 30
SupportedTerminalModes : ANSI, VT100
SupportedCharacterDisplayModes : Console, Stream
system1 : ComputerSystem
ElementCapabilities
HostedService
HostedAccessPoint
Telnetsvc1 : ProtocolService
Protocol : 3 (Telnet)
MaxConnections : 5
CurrentActiveConnections : 0
ipprotoendpt1 : IPProtocolEndpoint
IPv4Address : 10.0.0.1
ServiceAccessBySAP
BindsTo
HostedAccessPoint
tcpprotoendpt1 : TCPProtocolEndpoint
PortNumber : 23
BindsTo
ipprotoendpt2 : IPProtocolEndpoint
IPv4Address : 9.0.0.1
tcpprotoendpt2 : TCPProtocolEndpoint
PortNumber : 1700
BindsTo

Figure 7 – Port Added Bound to Specific Interface

9.8 Stopping the Telnet Service from Listening on a Specific Port

A client can stop the telnet service from listening on a specific port by invoking the intrinsic DeleteInstance operation against the instance of CIM_TCPProtocolEndpoint that represents the port.

Using the configuration shown in Figure 7 as an example, invoking the DeleteInstance operation against the instance tcpprotoendpt2 would cause the telnet service to no longer listen on port 1700.

9.9 Determining Whether ElementName Can Be Modified

For a given instance of CIM_ProtocolService, a client can determine whether it can modify the ElementName as follows:

1) Find the CIM_TelnetCapabilities instance that is associated with the target instance.

2) Query the value of the ElementNameEditSupported property of the CIM_TelnetCapabilities instance. If the value is TRUE, the client can modify the ElementName property of the target instance.

9.10 Determining Whether State Management Is Supported

For a given instance of CIM_ProtocolService, a client can determine whether state management is supported as follows:

1) Find the CIM_EnabledLogicalElementCapabilities instance that is associated with the CIM_LANEndpoint instance.

2) Query the value of the RequestedStatesSupported property. If at least one value is specified, state management is supported.

10 CIM Elements

Table 17 shows the instances of CIM Elements for this profile. Instances of the CIM Elements shall be implemented as described in Table 17. Sections 7 (“Implementation”) and 8 (“Methods”) may impose additional requirements on these elements.

Table 17 – CIM Elements: Telnet Service Profile

Element Name	Requirement	Description
Classes		
CIM_BindsTo	Optional	See 10.1 and 10.2.
CIM_ElementCapabilities	Mandatory	See 10.3.
CIM_ElementSettingData	Optional	See 10.4 and 10.5.
CIM_HostedAccessPoint	Mandatory	See 10.6.
CIM_HostedService	Mandatory	See 10.7.
CIM_ProtocolService	Mandatory	See 10.8.
CIM_ProvidesEndpoint	Mandatory	See 10.9.
CIM_RegisteredProfile	Mandatory	See 10.10.
CIM_ServiceAccessBySAP	Conditional	See 0.
CIM_TelnetCapabilities	Mandatory	See 10.12.
CIM_TelnetProtocolEndpoint	Mandatory	See 10.13.
CIM_TelnetSettingData	Optional	See 10.14.
CIM_TCPProtocolEndpoint	Optional	See 10.15.
Indications		
None defined in this profile		

10.1 CIM_BindsTo — TCPProtocolEndpoint

When an instance of CIM_TCPProtocolEndpoint is instrumented, CIM_BindsTo is used to associate the CIM_TelnetProtocolEndpoint instance with the CIM_TCPProtocolEndpoint instance on which it depends. Table 18 provides information about the properties of CIM_BindsTo.

Table 18 – Class: CIM_BindsTo (TCPProtocolEndpoint)

Properties	Requirement	Notes
Antecedent	Mandatory	The value of this property shall be a reference to an instance of CIM_TCPProtocolEndpoint. Cardinality 0..1
Dependent	Mandatory	The value of this property shall be a reference to an instance of CIM_TelnetProtocolEndpoint. Cardinality *

10.2 CIM_BindsTo — IPProtocolEndpoint

When the relationship with an underlying IP interface is modeled according to 7.3, CIM_BindsTo is used to associate the CIM_TCPProtocolEndpoint instance with the CIM_IPProtocolEndpoint instance on which it depends. Table 19 provides information about the properties of CIM_BindsTo.

Table 19 – Class: CIM_BindsTo (IPProtocolEndpoint)

Properties	Requirement	Notes
Antecedent	Mandatory	The value of this property shall be a reference to an instance of CIM_IPProtocolEndpoint. Cardinality *
Dependent	Mandatory	The value of this property shall be a reference to an instance of CIM_TCPProtocolEndpoint. Cardinality 1..*

10.3 CIM_ElementCapabilities

CIM_ElementCapabilities is used to associate an instance of CIM_TelnetCapabilities with the CIM_ProtocolService. Table 20 provides information about the properties of CIM_ElementCapabilities.

Table 20 – Class: CIM_ElementCapabilities

Properties	Requirement	Notes
ManagedElement	Mandatory	This property shall be a reference to the Central Instance. Cardinality 1..*
Capabilities	Mandatory	This property shall be a reference to the CIM_TelnetCapabilities instance. Cardinality 1

10.4 CIM_ElementSettingData — Telnet Service

CIM_ElementSettingData is used to associate instances of CIM_TelnetSettingData with instances of CIM_ProtocolService. Table 21 provides information about the properties of CIM_ElementSettingData.

Table 21 – Class: CIM_ElementSettingData (Telnet Service)

Properties	Requirement	Notes
ManagedElement	Mandatory	This property shall be a reference to the Central Instance. Cardinality *
SettingData	Mandatory	This property shall be a reference to an instance of CIM_TelnetSettingData. Cardinality *
IsDefault	Mandatory	Matches 1 (Is Default) or 2 (Is Not Default)
IsNext	Mandatory	Matches 1 (Is Current) or 2 (Is Not Current)

10.5 CIM_ElementSettingData — m ,Telnet Session

CIM_ElementSettingData is used to associate instances of CIM_TelnetSettingData with instances of CIM_TelnetProtocolEndpoint. Table 22 provides information about the properties of CIM_ElementSettingData.

Table 22 – Class: CIM_ElementSettingData (Telnet Session)

Properties	Requirement	Notes
ManagedElement	Mandatory	This property shall be a reference to an instance of CIM_TelnetProtocolEndpoint. Cardinality *
SettingData	Mandatory	This property shall be a reference to an instance of CIM_TelnetSettingData. Cardinality *
IsCurrent	Mandatory	Matches 1 (Is Current) or 2 (Is Not Current)

10.6 CIM_HostedAccessPoint

CIM_HostedAccessPoint is used to associate the CIM_TelnetProtocolEndpoint and CIM_TCPProtocolEndpoint instances to their scoping CIM_ComputerSystem instance. Table 23 provides information about the properties of CIM_HostedAccessPoint.

Table 23 – Class: CIM_HostedAccessPoint

Properties	Requirement	Notes
Antecedent	Mandatory	This property shall be a reference to an instance of CIM_ComputerSystem. Cardinality 1
Dependent	Mandatory	This property shall be a reference to an instance of CIM_TelnetProtocolEndpoint or CIM_TCPProtocolEndpoint. Cardinality *

10.7 CIM_HostedService

CIM_HostedService is used to associate the CIM_ProtocolService to its scoping CIM_ComputerSystem instance. Table 24 provides information about the properties of CIM_HostedService.

Table 24 – Class: CIM_HostedService

Properties	Requirement	Notes
Antecedent	Mandatory	This property shall be a reference to the Scoping Instance. Cardinality 1
Dependent	Mandatory	This property shall be a reference to the Central Instance. Cardinality 1..*

10.8 CIM_ProtocolService

CIM_ProtocolService represents the telnet service. Table 25 provides information about the properties of CIM_ProtocolService.

Table 25 – Class: CIM_ProtocolService

Properties and Methods	Requirement	Notes
SystemCreationClassName	Mandatory	None
CreationClassName	Mandatory	None
SystemName	Mandatory	None
Name	Mandatory	None
Protocol	Mandatory	Matches 3 ("Telnet")
MaxConnections	Mandatory	A value of 0 (zero) shall indicate unknown.
RequestedState	Mandatory	See 7.1.2.2 and 7.1.1.3.
EnabledState	Mandatory	See 7.1.1.4 and 7.1.2.3.
HealthState	Mandatory	None
OperationalStatus	Mandatory	None
ElementName	Mandatory	See 7.1.3 and 7.1.4.
RequestStateChange( )	Mandatory	See 8.2.
ListenOnPort( )	Mandatory	See 8.1.

10.9 CIM_ProvidesEndpoint

CIM_ProvidesEndpoint is used to associate the instance of CIM_ProtocolService with an instance of CIM_TelnetProtocolEndpoint that represents a session with the service. Table 26 provides information about the properties of CIM_ProvidesEndpoint.

Table 26 – Class: CIM_ProvidesEndpoint

Properties	Requirement	Notes
Antecedent	Mandatory	This property shall be a reference to the instance of CIM_ProtocolService. Cardinality 1
Dependent	Mandatory	This property shall be a reference to an instance of CIM_TelnetProtocolEndpoint. Cardinality *

10.10 CIM_RegisteredProfile

CIM_RegisteredProfile identifies the *Telnet Service Profile*. The CIM_RegisteredProfile class is defined by the *Profile Registration Profile*. With the exception of the mandatory values specified for the properties in Table 27, the behavior of the CIM_RegisteredProfile instance is in accordance with the constraints specified in the *Profile Registration Profile*.

Table 27 – Class: CIM_RegisteredProfile

Properties	Requirement	Notes
RegisteredName	Mandatory	This property shall have a value of "Telnet Service".
RegisteredVersion	Mandatory	This property shall have a value of "1.0.0".
RegisteredOrganization	Mandatory	This property shall have a value of "DMTF".

NOTE: Previous versions of this document included the suffix “Profile” for the RegisteredName value. If implementations querying for the RegisteredName value find the suffix “Profile”, they should ignore the suffix, with any surrounding white spaces, before any comparison is done with the value as specified in this document.

10.11 CIM_ServiceAccessBySAP

CIM_ServiceAccessBySAP is used to associate the instance of CIM_ProtocolService with an instance of CIM_TCPProtocolEndpoint over which a session with the service can be established. Table 28 provides information about the properties of CIM_ServiceAccessBySAP.

Table 28 – Class: CIM_ServiceAccessBySAP

Properties	Requirement	Notes
Antecedent	Mandatory	This property shall be a reference to the instance of CIM_ProtocolService. Cardinality 1..*
Dependent	Mandatory	This property shall be a reference to an instance of CIM_TelnetProtocolEndpoint. Cardinality *

10.12 CIM_TelnetCapabilities

CIM_TelnetCapabilities represents the capabilities of a telnet service. Table 29 provides information about the properties of CIM_TelnetCapabilities.

Table 29 – Class: CIM_TelnetCapabilities

Properties	Requirement	Notes
InstanceID	Mandatory	None
ElementName	Mandatory	None
RequestedStatesSupported	Mandatory	See 7.1.1.2.1 and 7.1.2.1.1.
ElementNameEditSupported	Mandatory	See 7.1.3.1.1 and 7.1.4.1.1.
MaxElementNameLen	Conditional	See 7.1.3.1.2 and 7.1.4.1.2.
MaxConnections	Mandatory	A value of 0 (zero) shall indicate unknown.
SupportedTerminalModes	Mandatory	None
OtherSupportedTerminalMode	Conditional	This property shall have a value when the SupportedTerminalModes property has a value of 1 ("Other").
SupportedCharacterDisplayModes	Mandatory	None
OtherSupportedCharacterDisplayMode	Conditional	This property shall have a value when the SupportedCharacterDisplayModes property has a value of 1 ("Other").

10.13 CIM_TelnetProtocolEndpoint

CIM_TelnetProtocolEndpoint represents a session that is established with the telnet service. Table 30 provides information about the properties of CIM_TelnetProtocolEndpoint.

Table 30 – Class: CIM_TelnetProtocolEndpoint

Properties	Requirement	Notes
SystemCreationClassName	Mandatory	None
CreationClassName	Mandatory	None
SystemName	Mandatory	None
Name	Mandatory	None
NameFormat	Mandatory	None
ProtocolIFType	Mandatory	Matches 1 (Other)
OtherTypeDescription	Mandatory	Matches "Telnet"
ElementName	Mandatory	Pattern ".*"
RequestStateChange( )	Mandatory	See 8.2.
EnabledTerminalModes	Mandatory	None
OtherEnabledTerminalMode	Conditional	This property shall have a value when the EnabledTerminalModes property has a value of 1 ("Other").
TerminalMode	Mandatory	None
OtherTerminalMode	Conditional	This property shall have a value when the TerminalMode property has a value of 1 ("Other").
EnabledCharacterDisplayModes	Mandatory	None

Properties	Requirement	Notes
OtherEnabledCharacterDisplayMode	Conditional	This property shall have a value when the EnabledCharacterDisplayModes property has a value of 1 ("Other").
CharacterDisplayMode	Mandatory	None
OtherCharacterDisplayMode	Conditional	This property shall have a value when the CharacterDisplayMode property has a value of 1 ("Other").
IdleTimeout	Mandatory	None
EscapeCharacter	Mandatory	None

832 10.14 CIM_TelnetSettingData

833 CIM_TelnetSettingData represents settings that can be applied to a telnet session. Table 31 provides
834 information about the properties of CIM_TelnetSettingData.

835 **Table 31 – Class: CIM_TelnetSettingData**

Properties	Requirement	Notes
InstanceID	Mandatory	None
ElementName	Mandatory	Pattern ".*"
EnabledTerminalModes	Mandatory	None
OtherEnabledTerminalMode	Conditional	This property shall have a value when the EnabledTerminalModes property has a value of 1 ("Other").
TerminalMode	Mandatory	None
OtherTerminalMode	Conditional	This property shall have a value when the TerminalMode property has a value of 1 ("Other").
EnabledCharacterDisplayModes	Mandatory	None
OtherEnabledCharacterDisplayMode	Conditional	This property shall have a value when the EnabledCharacterDisplayModes property has a value of 1 ("Other").
CharacterDisplayMode	Mandatory	None
OtherCharacterDisplayMode	Conditional	This property shall have a value when the CharacterDisplayMode property has a value of "Other".
IdleTimeout	Mandatory	None
EscapeCharacter	Mandatory	None

10.15 CIM_TCPProtocolEndpoint

CIM_TCPProtocolEndpoint represents an IP port to which a telnet session or service can be bound. Table 32 provides information about the properties of CIM_TCPProtocolEndpoint.

Table 32 – Class: CIM_TCPProtocolEndpoint

Properties	Requirement	Notes
SystemCreationClassName	Mandatory	None
CreationClassName	Mandatory	None
SystemName	Mandatory	None
Name	Mandatory	None
NameFormat	Mandatory	Pattern “.*”
ProtocolIFType	Mandatory	Matches 4111 ("TCP")
ElementName	Mandatory	Pattern “.*”
PortNumber	Mandatory	None

ANNEX A
(Informative)

Change Log

Version	Date	Description
1.0.0a	06/16/2006	Released as Preliminary Standard
1.0.0	6/22/2009	DMTF Standard Release