



Nebraska Information Technology Commission

STANDARDS AND GUIDELINES

Scheduling Standard for Synchronous Distance Learning and Videoconferencing

Category	Video Architecture
Title	Scheduling Standard for Synchronous Distance Learning and Videoconferencing
Number	

Applicability	<input checked="" type="checkbox"/> State Government Agencies <input checked="" type="checkbox"/> All Standard <input type="checkbox"/> Excluding Not Applicable
	<input checked="" type="checkbox"/> State Funded Entities - All entities receiving state funding for matters covered by this document..... Standard
	<input checked="" type="checkbox"/> Other: Entities using state-owned or state-leased communication networks for synchronous video.....Standard
	Definitions: Standard - Adherence is required. Certain exceptions and conditions may appear in this document, all other deviations from the standard require prior approval (see Section 3.1). Guideline - Adherence is voluntary.

Status	<input checked="" type="checkbox"/> Adopted <input type="checkbox"/> Draft <input type="checkbox"/> Other: _____
Dates	Version Date: April 17, 2006 Date Adopted by NITC: May 1, 2006 Other: Contact information updated in § 3.1.1 on February 28, 2008.

1.0 Standard

This document consists of a list of features that ought to be available in any system that is developed for use in scheduling of synchronous events using videoconferencing technology.

It is the intent that any and all such scheduling systems defined by the specifications below be accessible either through the Internet or within a defined intranet as decided upon by the system administrators.

The following sections attempt to describe the various levels and types of scheduling or coordination that might be considered.

1.1 Hardware control component

When attempting to link two or more sites electronically, some system must coordinate the connectivity between/among the sites. This includes controlling the network and endpoint hardware and bandwidth necessary to cause a successful connection.

1.1.1 Standards for hardware control system

A system should be able to control all hardware in a network and be capable of linking into all the other systems listed in this standard to enable the following:

- 1.1.1.1 Browser-based access
- 1.1.1.2 Locate devices by IP address (both static and DHCP)
- 1.1.1.3 Locate devices by MAC address
- 1.1.1.4 Facilitate far-end control in endpoint devices with the capability
- 1.1.1.5 Display a call list that is understood by non-techs using plain English site description
- 1.1.1.6 Have a defined quality of service
- 1.1.1.7 Hardware and software systems must work such that the scheduling system is available for use at least 99.9% of the time
- 1.1.1.8 The system should not require reset/reboot more often than once per week
- 1.1.1.9 Have a minimum of a one-year warranty
- 1.1.1.10 Annual maintenance fees after the warranty has run out should not exceed 10% of original purchase price
- 1.1.1.11 Keep automated log data that may be defined by and searched in ways to be defined by the system administrator(s) with multiple possible search definitions
- 1.1.1.12 Maintain security in ways that can be defined by system administrators including:
 - 1.1.1.12.1 Keeping log information secure
 - 1.1.1.12.2 Limiting access to an event
 - 1.1.1.12.3 Turning encryption on/off in endpoint devices with the capability

- 1.1.1.12.4 Identifying security capability to system administrators and event coordinators by site
- 1.1.1.12.5 Provide an identity management system that allows for multiple levels of user access as defined by system administrators
- 1.1.1.13 Facilitate ad hoc events by users with permission from system administrators
- 1.1.1.14 Facilitate scheduled events by users with permission from system administrators
- 1.1.1.15 Be capable of controlling all specific equipment used in the network (CODECs, routers, switchers, MCUs, firewall systems, etc.)
- 1.1.1.16 Facilitate various types of events
 - 1.1.1.16.1 Broadcast to all
 - 1.1.1.16.2 Broadcast to some
 - 1.1.1.16.3 2-way point-to-point
 - 1.1.1.16.4 2-way multipoint
 - 1.1.1.16.5 A combination of broadcast and 2-way

1.2 Event logging component

If a system coordinator has a requirement to track information about events some mechanism would have to be in place. This may include knowing the number of people at a site, the minutes an event runs at any given site, or the number of events a specific organization schedules.

1.2.1 Standards for event logging system

A system should be able to automatically store data and permit reports and be capable of linking into the all the other systems listed in this standard to include the following:

- 1.2.1.1 Browser-based access
- 1.2.1.2 Store data in an ODBC compliant relational database
- 1.2.1.3 Provide fields for logging various pieces of information
 - 1.2.1.3.1 minutes a site is available/not available
 - 1.2.1.3.2 minutes a site is used
 - 1.2.1.3.3 number of event attendees
 - 1.2.1.3.4 type of event as defined by system administrators
 - 1.2.1.3.5 number of sites per event
- 1.2.1.4 Permit system administrator defined fields (no fewer than 64)
 - 1.2.1.4.1 Definable by site, groups of sites, and groups of groups
- 1.2.1.5 Related GUI entry for call setup as defined by system administrators
 - 1.2.1.5.1 Physical site location

- 1.2.1.5.2 Local contact and facility arrangement info
 - 1.2.1.5.2.1 Costs, availability, site rules
 - 1.2.1.5.2.2 ADA options available
- 1.2.1.5.3 Searchable criteria for describing or accessing spaces
- 1.2.1.5.4 Must have a GUI that is understandable in plain English
- 1.2.1.6 Facilitate search to know what facilities are in conflict or are often in conflict
 - 1.2.1.6.1 number of conflicts for a given site over a specific amount of time
- 1.2.1.7 Accommodate a facility “wait” list / availability queue
 - 1.2.1.7.1 If a facility is already confirmed for an event, it should log who has requested the same facility then auto notify the requester(s) if the event causing the conflict is cancelled
- 1.2.1.8 Account for billing charges per event/location and total bill generation after the event

1.3 Facilities coordination component

If an event will include locations for which more than one person/organization has responsibility, then some mechanism must exist for coordinating use of facilities. There may be technical or administrative limits as to the number or types of sites that can participate in any given event. This could be as simple as users coordinating times over the telephone or through e-mail, but for some applications there may be a greater need for pre-scheduling and coordination among multiple administrators.

1.3.1 Standards for facilities coordination system

A system should enable access to facilities based on defined permissions, resolve conflicts based on pre-determined policies and be capable of linking into all the other systems listed in this standard to include the following:

- 1.3.1.1 Browser-based access
- 1.3.1.2 System editable user access
 - 1.3.1.2.1 Activate a facility such that it is known to the system and to system users
 - 1.3.1.2.2 Building level admin such that the facilities at a specific location can set policies for that site and permit use by others
 - 1.3.1.2.3 Regional admin (organization / geo-political) such that a group of facilities can set policies for all related sites and permit use by others

- 1.3.1.2.4 Sys admin (configuration) such that technical system setup, operation and maintenance may be conducted
- 1.3.1.2.5 Sector admin such that groups of groups of facilities can set policies for all related sites and permit use by others
- 1.3.1.2.6 Room request such that any designated site user or administrator may request access to a facility they do not already have rights to schedule
- 1.3.1.2.7 Participant access defaults
 - 1.3.1.2.7.1 All denied unless specifically permitted
 - 1.3.1.2.7.2 All permitted unless specifically denied
- 1.3.1.2.8 User account directory service with definable permissions for each account
- 1.3.1.3 Types of coordination
 - 1.3.1.3.1 Event posting to inform others of possible access
 - 1.3.1.3.2 Site joining to allow other to access
 - 1.3.1.3.3 Ad hoc to allow immediate activation of unscheduled events
 - 1.3.1.3.4 Pre-planned events that may occur once or cyclically
 - 1.3.1.3.5 Inter network coordination to permit interaction of sites both within and outside a controlled network
 - 1.3.1.3.6 Intra network coordination to permit interaction of sites within a controlled network
 - 1.3.1.3.7 Administrator defined bandwidth prioritization to minimize network bottlenecks
 - 1.3.1.3.8 Administrator defined asset prioritization to minimize system conflicts
 - 1.3.1.3.9 Site-requested bandwidth speed
- 1.3.1.4 Facilities information to be posted
 - 1.3.1.4.1 Identify technology available by site
 - 1.3.1.4.2 Physical site location
 - 1.3.1.4.3 Local contact and facility arrangement info
 - 1.3.1.4.3.1 Costs, availability, site rules
 - 1.3.1.4.3.2 ADA options available
- 1.3.1.5 Event information to be posted
 - 1.3.1.5.1 Definable credit type
 - 1.3.1.5.2 Definable student type
 - 1.3.1.5.3 Event/course prerequisites
 - 1.3.1.5.4 Event/course descriptions
 - 1.3.1.5.5 Teacher / event leader / presenter
 - 1.3.1.5.6 Materials needed
 - 1.3.1.5.7 Event coordinator info
 - 1.3.1.5.8 Target audience
 - 1.3.1.5.9 Mapquest-like link

1.4 People coordination component

If a specific location is to be used this implies that operational people may need to be dedicated to cause successful events. Since there will be a variety of site designs and operations, then there will be a variety of the demand of staff time. Likewise each facility will have limits on how many people can attend at any one location. Finally, there may be limitations as to the total number of event participants allowed.

1.4.1 Standards for people coordination system

A system should enable interaction of people based on policies set by system administrators and be capable of linking into all the other systems listed in this standard to include the following:

- 1.4.1.1 Browser-based access
- 1.4.1.2 Allow for multiple permission levels
 - 1.4.1.2.1 View schedules
 - 1.4.1.2.2 Request systems/facilities
 - 1.4.1.2.3 Approve systems/facilities use
- 1.4.1.3 Provide information about instructor/facilitator and their availability
- 1.4.1.4 Allow for predetermined maximum number of attendees
- 1.4.1.5 Track and display count of committed attendees
- 1.4.1.6 Track and display remaining permitted attendees
- 1.4.1.7 Allow for predetermined maximum number of sites
- 1.4.1.8 Track and display count of committed sites
- 1.4.1.9 Track and display remaining permitted sites

1.5 Event clearinghouse component

As system users see a need for pre-scheduled events coordinated among a large number of facilities and administrators, the concept of a virtual location for brokering of events becomes attractive. Such a clearinghouse could serve as a way that event coordinators might let others know the specifics of events they are planning (a certain class with a specific sort of content will be offered on a certain schedule for a certain period of time or a specific event will happen one time on a specific day at a specific time).

Such a clearinghouse could also serve as a way for interested parties to find events that meet their specific needs (a school administrator has a certain number of students who need a specific class that is not offered locally). Availability might also include information about participant or site number limitations (the total seats/sites in the class/event, the number requested/registered so far and the number remaining of the total).

1.5.1 Standards for an event clearing house system

A system should enable online interaction for publishing of event information and be capable of linking into all the other systems listed in this standard to include the following:

- 1.5.1.1 Browser-based access
- 1.5.1.2 Posting of one-time single events
- 1.5.1.3 Posting of sequenced or cyclical events
- 1.5.1.4 Posting of costs to participate in an event
- 1.5.1.5 Permit system administrator defined fields (no less than 256)
- 1.5.1.6 Provide for automated multiple time zone accommodation
- 1.5.1.7 Posting of multiple standard bell schedules related to formal educational events
- 1.5.1.8 Permitting or excluding view of encrypted/secured events such that those with permission may see that the events are available and those without permission won't even be able to know that these events are taking place
- 1.5.1.9 Posting of all, part or none of the information defined in the standards in this document as defined by system administrators
- 1.5.1.10 Use an ODBC compliant relational database
- 1.5.1.11 System administrator defined search/reporting capability
- 1.5.1.12 Posting of facility group affiliation
- 1.5.1.13 Provide for automated email notification of site requests/confirmations
 - 1.5.1.13.1 Events offered
 - 1.5.1.13.2 Events needed
 - 1.5.1.13.3 Event outages
 - 1.5.1.13.4 Event conflicts
- 1.5.1.14 Provide for automated site schedule generation to include
 - 1.5.1.14.1 Events offered
 - 1.5.1.14.2 Events needed
 - 1.5.1.14.3 Event outages
 - 1.5.1.14.4 Event conflicts
- 1.5.1.15 Provide for event cancellation "drop dead" date policies for events to include automated email notifications
 - 1.5.1.15.1 Minimums not met
 - 1.5.1.15.2 Facilities conflict not resolved
 - 1.5.1.15.3 Email notification
- 1.5.1.16 Provide for links to asynchronous event-related material (eLearning)
- 1.5.1.17 Provide for automated billing
- 1.5.1.18 Provide for post event evaluations as defined by system administrators

2.0 Purpose and Objectives

The purpose of this standard is to establish and define the needs for scheduling to be addressed when purchasing and maintaining scheduling coordination systems.

2.1 Background

The State of Nebraska is about to exceed 300 IP-based videoconferencing facilities within the sectors of K-12 education, higher education, informal education, telehealth, and state agencies. In order for any particular entity to be able to connect to any other particular entity (within or outside their subsector), some software system is required to complete the connection, maintain the connection, and to list the directory of participating entities.

The standards expressed herein is a product of a meeting that took place on February 3, 2006, with input from over 20 representatives from the NITC Technical Panel's Statewide Synchronous Video Work Group, coming from institutions all across the State. It is this unselfish dedication to achieving a common good that makes such a software system possible.

When describing scheduling of teleconferencing events there is a variety of descriptive language expressed by those who use the technology. Depending on how "scheduling" is defined, the need may be described on a continuum from "not needed" to "locally coordinated" to "centrally coordinated".

2.2 Objective

The objective of this standard is to enable all existing and future synchronous distance learning and videoconferencing facilities in Nebraska to achieve interoperability and maintain an acceptable quality of service through scheduled and ad hoc event coordination.

3.0 Applicability

These standards apply to synchronous distance learning and videoconferencing facilities as follows:

- If utilizing state-owned or state-leased communications networks:
 - Any synchronous distance learning facility or videoconferencing application which utilizes state-owned or state-leased communications networks must comply with the scheduling standards listed in Sections 1.1 through 1.5; or
 - The entity must provide, or arrange for, coordination on their behalf through some other entity with the stated capability.

- If using state funding:
 - All **new** facilities or applications receiving state funding must comply with the scheduling standards listed in Sections 1.1 through 1.5.
 - All **existing** facilities or applications receiving state funding for ongoing operations must convert to the standards listed in Sections 1.1 through 1.5 as soon as fiscally prudent or upon renewal of any existing scheduling system service contract, whichever comes first.

- These standards **do not apply** to the following entities:
 - University of Nebraska (relating to the university’s academic research mission)
 - Any entity which applies for, and receives, an exemption.

General Statement on Applicability

The Governing board or chief administrative officer of each organization is responsible for compliance with these standards. The NITC will consider adherence to technical standards as part of its evaluation and prioritization of funding requests

3.1 Exemption

Exemptions may be granted by the NITC Technical Panel upon request by an agency or other entity.

3.1.1 Exemption Process

Any agency or other entity may request an exemption from this standard by submitting a “Request for Exemption” to the NITC Technical Panel. Requests should state the reason for the exemption. Reasons for an exemption include, but are not limited to: statutory exclusion; federal government requirements; or financial hardship. Requests may be submitted to the Office of the NITC via e-mail (ocio.nitc@nebraska.gov) or letter (Office of the NITC, 501 S. 14th Street, Lincoln, NE 68509). The NITC Technical Panel will consider the request and grant or deny the exemption. A denial of an exemption by the NITC Technical Panel may be appealed to the NITC.

4.0 Responsibility

An effective program for scheduling standards compliance involves cooperation of many different entities. Major participants and their responsibilities include:

1. Nebraska Information Technology Commission. The NITC provides strategic direction for state agencies and educational institutions in the area of information technology. The NITC also has statutory responsibility to adopt minimum technical standards and guidelines for acceptable and cost-effective use of information technology. Implicit in these requirements is the responsibility to promote adequate quality of service and uniformity for information systems through adoption of policies, standards, and guidelines.
2. Technical Panel Statewide Synchronous Video Work Group. The NITC Technical Panel, with advice from the Statewide Synchronous Video Work Group, has responsibility for recommending scheduling standard policies and guidelines and making available best practices to operational entities.
3. Agency and Institutional Heads. The highest authority within an agency or institution is responsible for interoperability of information resources that are consistent with this policy. The authority may delegate this responsibility but delegation does not remove the accountability.
4. Information Technology Staff. Technical staff must be aware of the opportunities and responsibility to meet the goals of interoperability of information systems.

5.0 Related Documents

5.1 Statewide Synchronous Video Work Group Charter:

<http://www.nitc.state.ne.us/tp/workgroups/video/charter.pdf>

5.2 Glossary of Technical Terms

<http://www.nitc.state.ne.us/itc/citizens/glossary.htm>