



Education

NSW Public Schools - Video collaboration tools standard

NSW DoE, Information Technology Standards and Guidelines

Document Details:

This document specifies the initial, basic requirements for the provision of a software-based Video Collaboration (VC) standard for NSW Department of Education (NSW DoE). These standards shall be applied to current and future NSW DoE Video Conferencing implementation projects. The standards have been designed to be compatible with current and future NSW DoE approved classroom audio-visual (AV) equipment including, but not limited to:

- Video equipment including main learning displays (MLDs - including interactive and non-interactive displays) and conferencing cameras.
- Audio equipment including speakers and microphones.
- Network considerations including bandwidth, routing, Quality of Service (QoS) and switching.

Exact measurements, quantities, equipment locations, and other room aspects such as equipment installation methods will vary from room to room and project to project.

Glossary of terms

Term	Definition
"Shall"	The term "SHALL" means that the item is an absolute requirement of the standard. Omission of this item from the deployment would mean that the desired objectives would not be met. Objectives include availability, specific functions or technical requirements, and dependant features.
"Shall Not"	The phrase "SHALL NOT", means that the definition is an absolute prohibition of the standard.
"May"	"MAY" means that an item is truly optional. For example, you may choose to include the item because a particular objective or application/protocol requires it or because it enhances the deployment.

Revision History

Revision Date	Version No.	Summary of Changes Made	Author
13/09/2019	0.1	Initial document draft	Ryan O'Hara
16/10/2019	0.2	Re-draft with product owner feedback	Ryan O'Hara
22/11/2019	1.0	Re-draft with specialist AV/VC staff members	Ryan O'Hara
11/02/2020	1.1	Re-draft to align with new AV standard 1.3	Ryan O'Hara
17/02/2020	1.2	Re-draft to align with new AV standard 1.4	Ryan O'Hara

Approvals

Name	Title	Approval Date
James Quiring	Service Relationship Manager	13/02/2020
Stephen Harding	Senior Collaboration Specialist	13/02/2020
School Network Design Authority (SNDA)	N/A – Membership approval	14/02/2020
Architecture Design Authority (ADA)	N/A – Membership approval	21/02/2020

Associated International and Australian Standards

Name
International Telecommunications Union (ITU) T.120 (Data Conferencing)
ITU H.320 (Video Conferencing over Switched Networks)
ITU H.323 (Video Conferencing over packet-switched networks using RTP/RCTP)
ITU H.324 (Video Conferencing over analogue telephone network)

Associated Documents – NSW Department of Education

Name	Version
NSW DoE Structured Cabling Standard	Latest available in DG 64.02
NSW DoE AV specification	Latest available in DG 64.14

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1. Scope of Works

This section has been supplied to ensure that any video collaboration (VC) implementations requiring the installation of additional equipment, hardware, fixtures and cabling are installed with all works within the VC installation project's defined scope.

The VC tools standard is based on a standard audio visual (AV), school learning display installation (main learning display, mini-pc, attached conferencing camera and speaker unit, and associated peripherals detailed in the [NSW Department of Education \(DoE\) audio visual \(AV\) specification for school learning displays](#) available in Educational Facilities Standards and Guidelines (EFSG) Design Guide (DG) 64.14) with department sponsored VC software installed on the attached T4L interactive multi-media PC.

1.1 Roles and responsibilities

Role	Responsibility
Video Collaboration (VC) Contractor/Installer	<ul style="list-style-type: none"> Installing all equipment, software and required cabling (whether or not it is documented in this standard and all accompanying documents). Notifying the Client of any errors, omissions or ambiguities in the standards and accompanying documents. Provide all associated labour. Deliver operational VC systems as per the intended design, documented in this specification and all accompanying documents. Ensure that the supply and installation of the VC systems is of the highest quality and is integrated with other related systems and designs including, but not limited to; electrical (power, communications, lighting), mechanical, architectural, structural, interior design, acoustics, fire, and hydraulics. The VC Contractor shall ensure that all aspects of the installation support efficient paths for future expansion or upgrade.
Client (Or Client IT Representative)	<ul style="list-style-type: none"> Liaising with the NSW Department of Education's (NSW DoE) Information Technology Directorate (ITD) to organise and schedule the procurement, delivery and installation of all equipment, software and required cabling in cooperation with the Video Collaboration Contractor, Client and Builder. Ensuring that all supplied equipment is compliant with NSW DoE standards and guidelines, and that equipment has been supplied through NSW DoE contracted suppliers. Provide any additional video collaboration requirements not specified within this document to the VC Contractor. In cooperation with the VC Contractor, ensure that the supply and installation of the VC systems is of the highest quality and is integrated with other related systems and designs including, but not limited to; electrical (power, communications, lighting), mechanical, architectural, structural, interior design, acoustics, fire, and hydraulics. Sign off and approval of all Project Documentation. Final sign-off of fit-out and installation in cooperation with the VC Contractor and ITD.
Information Technology Directorate (ITD) Project Manager	<ul style="list-style-type: none"> On behalf of the Client, organise the procurement delivery and installation of any required equipment, software and cabling. Final sign-off of fit-out and installation in cooperation with the VC Contractor and the Client.

1.2 Complete supply and install

- This document does not specify every line item (hardware, software, cabling, connectors, labour etc.) required to complete each system(s).
- All required items must be included (or a reasonable allowance made) in the VC Contractor's tender response price to deliver a Project.
- Failure to include all required items in the VC Contractor's tender response price, shall not be grounds for the VC Contractor to claim for variations to deliver this Project after the tender has been awarded.

1.3 Equipment on client LAN

- The VC Contractor shall liaise with the Client (or Client IT Representative) to inform them of all equipment that will require direct connection to any existing NSW DoE ICT network.
- The AV Contractor shall be responsible for providing all items required to deliver fully working systems, whether or not explicitly specified in this document and whether "Supply and Install" is mentioned or not.

- Information supplied shall include as a minimum: brand name, model number, MAC address, serial number and related specifications.
- This information shall be made available to the Client (or Client IT Representative) at least three (3) weeks prior to delivering the equipment to site.

1.4 Site works

- The VC Contractor shall take full responsibility for all works on site for the entirety of the project.
- The VC Contractor shall cover, without additional cost to the Client, inclusion of any necessary services and items to effect the safe and timely completion of the project. Services and items shall include, but are not limited to: all freight and delivery costs to and from site for any item unless additional and/or costed separate to the project, scaffolding, rigging, lifting and high-lift equipment, safety barriers and safety equipment, dust covers and protective covers, cleaning equipment, waste and rubbish removal and parking.

1.5 Basic warranty statement

- Clear identification of inclusions and any exclusions or conditions affecting warranty of the systems shall be provided.
- A minimum warranty period of 48 months (4 years), and equivalent to the current contract warranty period, shall be required for all items of equipment, parts, labour and programming.
- The warranty statement shall detail all items associated with warranty work and how the VC Contractor shall service the warranty period, including, but not limited to, the initial service call response period, on-site response period, removal of faulty equipment, replacement or loan of equipment (if required), freight charges (for all segments of the fault period including back-to-base and return-to-manufacturer), parts and labour.

1.6 Defects and liability period

- The Defects Liability Period shall apply to all equipment and installation following practical completion as stated above, as well as any period following thereafter for which any nominated defects on site remain incomplete or outstanding.
- At the commencement of the Defects Liability Period the VC Contractor shall warrant all equipment and installation for 48 months (4 years).
- Any deviation from this for equipment, systems or workmanship provided by the AV Contractor shall be clearly indicated in the Tender Submission, including any extended warranty period for any items of equipment. The Defects Liability Period shall not commence until the Project Manager, in consultation with the Client, has specifically authorised the commencement.

1.7 Software and programming

- Commissioning and troubleshooting of any software and programming code is still to be included in the scope of the commercial (custom) software, the VC Contractor shall supply the Client with a complete set of licences and documentation for all devices, as well as utilities and tools used in the operation and maintenance of the system.
- Any commercial software provided by the VC Contractor shall be procured and transferred in full compliance with the publisher's copyright, licensing and other requirements of ownership. All user licence agreements shall be registered in the name of the Client by the VC Contractor.
- The Client shall also retain full rights to all custom software and programming code developed by the VC Contractor as part of the Project.
- The Client shall have the right to use, reproduce and modify the custom software and programming code as reasonably required. This includes the right to provide the custom software and programming code to an alternate VC Contractor/s for that contractor to maintain or update the system on behalf of the Client. This right shall be restricted to the project located at the site of installation.

- The VC Contractor shall supply the first version, and any subsequent versions of any and all custom software and programming code.

1.8 Documentation

The following technical information shall be provided by the VC Contractor at least three (3) weeks prior to commencement of works on site. All documents on this list below shall be presented in .pdf format, and formally approved by the Project Manager prior to the VC Contractor commencing works on site:

- Technical drawings of key items of equipment to be installed such as: loudspeakers, data projectors, projection screens, video conference cameras, LCD screens, table boxes, wall plates/control panels, as well as other relevant equipment.
- Full bill of materials (including equipment and labour) containing brand names, model codes, serial numbers and MAC address (where applicable).

1.8.1 Operations and maintenance manual

- The VC Contractor shall provide one draft electronic copy of the Operation and Maintenance Manual at least two (2) weeks prior to practical completion for approval by the Client. Within the final two (2) weeks prior to handover, or at handover, the VC Contractor shall provide the final copy to the Client.
- A complete Operational and Maintenance Manual shall be provided in a bound, A4 book (physical copy) and Microsoft Word (.docx, electronic copy).

1.9 Associated work by other contractors

- Various works, related to the VC systems may be carried out by contractors other than the VC Contractor.
- The VC Contractor shall liaise with the others on site and coordinate their works to ensure a high quality installation and finish.

1.10 Handover

Handover shall be defined as the time when each of the following is completed to the satisfaction of the Client and VC Contractor:

- All witness testing and defects inspections completed by both the VC Contractor and Client. The VC Contractor will provide defects reports post each round of testing and inspection.
- The VC Contractor has rectified any and all defects discovered during the testing and during defects inspections.
- The VC Contractor has provided the final set of Operations and Maintenance Manuals as described in section 1.8.1 of this specification.
- The VC Contractor has supplied any remaining items including:
 - all non-compiled code;
 - loose items including remote controls and;
 - any unused items procured by the Client.

2. Video collaboration tools standard

2.1 Key operational features

- The VC solution shall allow users to communicate in real time with multiple internal and external parties in different locations with audio, video and content sharing.
- The VC solution shall support various users and communication type topologies including:
 - Single user (Originating) to single user (Destination) (Peer-to-peer conferencing),
 - Single user (O) to multiple users (D) (Multi-party conferencing).
- The VC solution shall allow users to video conference using different collaborative services:
 - E.g. Platforms including Microsoft (MS) Skype for Business and MS Teams.

2.2 Video collaboration components

2.2.1 Camera, speakers and audio

- Video sources (cameras) shall allow users to communicate using the user's device speaker and microphone. Cameras, speakers, microphones and other audio devices shall be USB 3.0 connected peripherals to a department standard AV installation (Please see the [NSW Department of Education \(DoE\) audio visual \(AV\) specification](#) for school learning displays available in Educational Facilities Standards and Guidelines (EFSG) Design Guide (DG) 64.14).
- USB connected devices shall be Microsoft certified where possible.

2.2.3 Codec

- Installed video collaboration codecs shall meet all requirements stipulated in section 2.1, *Key Operational Features*.
- Installed video collaboration codecs shall be compatible with, and meet the requirements stated in the [NSW Department of Education \(DoE\) audio visual \(AV\) specification](#) for school learning displays, available in Educational Facilities Standards and Guidelines (EFSG) Design Guide (DG) 64.14.

2.2.4 User interface

- The VC solution's user interface shall allow users to grant or prohibit the sharing of desktops, applications and documents supported by International Telecommunications Union (ITU) T.120 (Data Conferencing), with all or selected users prior to and during the conference.

2.3 Other operational characteristics and considerations

2.3.1 Lighting

- Lights shining directly at the LCD displays create glare and should be avoided. If lights are positioned above the LCD screens, they should be individually addressable.
- Refer to the requirements set out in the [NSW Department of Education \(DoE\) audio visual \(AV\) specification](#) for school learning displays, available in Educational Facilities Standards and Guidelines (EFSG) Design Guide (DG) 64.14.

2.3.2 Acoustics

- Low ambient noise level of 30-40dBA needs to be ensured to allow clear and prominent speech intelligibility.
- The recommended Reverberation Time is 0.2-0.4 seconds to allow for comfort, speech intelligibility and proper function of conferencing equipment.

- To maintain privacy, consideration should be given to the acoustic rating of walls, doors and glazing.

2.3.3 Power and communications

- The power and communications requirements listed include AV devices that are used for video conferencing purposes. These requirements are based on those stated within the DoE *Schools AV standards for school learning spaces*. Allowances for general power and data outlets have not been included.
- Power and Data requirements are as follows:
 - 5 single general power outlets (LCD screen, IR Transmitter, Camera, T4L interactive multimedia PC, Spare)
 - 2 single communications/data outlets (T4L interactive multimedia PC, Spare).

2.4 Detailed functionality and performance

2.4.1 Modes of use

Mode	Description
Video Collaboration (VC) Mode	<ul style="list-style-type: none"> ▪ The VC solution shall be capable of running frequently utilised collaboration software including Microsoft <i>Skype for Business</i> and <i>Teams</i> and include video and audio calling, video collaboration and content sharing capabilities.

2.4.2 Video performance

- Displays for incoming video should be positioned as naturally and comfortably as possible for inclusion in the meeting and to enable/encourage eye contact. See the [NSW Department of Education \(DoE\) audio visual \(AV\) specification](#) available in Educational Facilities Standards and Guidelines (EFSG) Design Guide (DG) 64.14.

2.4.3 Audio performance

- **Speakers:** School VC solutions shall be volume adjustable up to 95dB.
- **Microphone:** School VC solution microphones shall be equipped with a sound pick-up range of 4 meters, and contain a beam forming array to reduce ambient noise and improve voice clarity.

Please note that if separate speaker systems have been installed in the learning space, and are connected to the school AV solution, ensure that the learning display's built-in speakers have been muted to prevent feedback looping.

2.4.4 Network functionality and performance – Quality of Service (QoS)

- QoS will be enforced by NSW DoE's Information Technology Directorate (ITD) as required.
- **NOTE:** Network functionality for school VC solutions may require additional routing and switching protocols to allow video collaboration information 'packets' to pass un-interrupted through a schools supplied routing and switching devices.



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