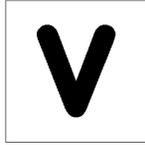


validation: **1.** Tests to determine whether an implemented system fulfills its requirements. **2.** The checking of data for correctness or for compliance with applicable standards, rules, and conventions.



(188) **3.** [The] process of applying specialized security test and evaluation procedures, tools, and equipment needed to establish acceptance for joint usage of an AIS by one or more departments or agencies and their contractors. *Note:* This action will include, as necessary, final development, evaluation, and testing, preparatory to acceptance by senior security test and evaluation staff specialists. [NIS] **4.** In universal personal telecommunications, the process of verifying that a user or terminal is authorized to access UPT services.

value-added carrier: A company that sells the services of a value-added network.

value-added network (VAN): A network using the communication services of other commercial carriers, using hardware and software that permit enhanced telecommunication services to be offered.

VAN: *Acronym for value-added network.*

variable length buffer: A buffer into which data may be entered at one rate and removed at another rate without changing the data sequence. (188) *Note:* Most first-in first-out (FIFO) storage devices are variable-length buffers in that the input rate may be variable while the output rate is constant or the output rate may be variable while the input rate is constant. Various clocking and control systems are used to allow control of underflow or overflow conditions.

variable slope delta modulation: *See continuously variable slope delta modulation.*

variance: In statistics, in a population of samples, the mean of the squares of the differences between the respective samples and their mean, expressed mathematically as:

$$\sigma^2 = \frac{1}{n} \sum_{i=1}^n (x_i - \bar{x})^2 \quad ,$$

where n is the number of samples, x_i is the value of sample i , \bar{x} is the mean of the samples, and σ^2 is the variance. *Note:* The square root of the variance, σ , is the standard deviation.

variant: **1.** One of two or more code symbols which have the same plain text equivalent. [NIS] **2.** One of several plain text meanings that are represented by a single code group. [JP1]

variation monitor: In ac power distribution, a device for sensing deviations of any measured variable, such as voltage, current, or frequency, and capable of initiating a programmed action, such as transfer to other power sources, when programmed limits of voltage, current, frequency, or time are exceeded, or providing an alarm, or both. (188)

vars: *Abbreviation for volt-amperes reactive.*

VC: *Abbreviation for virtual circuit.*

VDU: *Abbreviation for visual display unit. See monitor.*

vector processor: *Synonym array processor.*

verified off-hook: In telephone systems, a service provided by a unit that is inserted on each end of a transmission circuit for the purpose of verifying supervisory signals on the circuit. (188) *See automatic ringdown circuit.*

vertex angle: In an optical fiber, the angle formed by the extreme bound meridional rays accepted by the fiber, or emerging from it, equal to twice the acceptance angle; the angle formed by the largest cone of light accepted by the fiber or emitted from it. [FAA]

vertical redundancy check (VRC): *Synonym transverse redundancy check.*

very high frequency (VHF): Frequencies from 30 MHz to 300 MHz. (188)

very low frequency (VLF): Frequencies from 3 kHz to 30 kHz. (188)

vestigial sideband (VSB) transmission: Modified AM transmission in which one sideband, the carrier,

and only a portion of the other sideband are transmitted. (188)

VF: *Abbreviation for voice frequency.*

VFCT: *Abbreviation for voice frequency carrier telegraph. See voice-frequency telegraph.*

VFCTG: *Abbreviation for voice-frequency carrier telegraph. See voice-frequency telegraph.*

VF patch bay: *See voice frequency primary patch bay.*

VFTG: *Abbreviation for voice-frequency telegraph.*

VHF: *Abbreviation for very high frequency. See electromagnetic spectrum.*

via net loss (VNL): Pertaining to circuit performance prediction and description that allows circuit parameters to be predetermined and the circuit to be designed to meet established criteria by analyzing actual, theoretical, and calculated losses.

video: **1.** An electrical signal containing timing (synchronization), luminance (intensity), and often chrominance (color) information that, when displayed on an appropriate device, gives a visual image or representation of the original image sequences. **2.** Pertaining to the sections of a television system that carry television signals, either in unmodulated or modulated form. (188) **3.** Pertaining to the demodulated radar signal that is applied to a radar display device. (188) **4.** Pertaining to the bandwidth or data rate necessary for the transmission of real-time television pictures. [After FAA] *Note:* In practice, the baseband bandwidth required for the transmission of NTSC television pictures (not including the audio carriers) is approximately 5 MHz.

video codec: *See codec.*

videoconference: *See video teleconference.*

video display terminal: *Synonym visual display unit. See monitor.*

video display unit: *Synonym visual display terminal. See monitor.*

video frame: *See frame (def. #6).*

videophone: **1.** A telephone that is coupled to an imaging device that enables the call receiver or the call originator, or both, to view one another as on television, if they so desire. [From Weik '89] **2.** A military communications terminal that (a) has video teleconference capability, (b) is usually configured as a small desktop unit, designed for one operator, and (c) is a single, integrated unit. (188) [From Weik '89]

video teleconference: **1.** A teleconference that includes video communications. (188) **2.** Pertaining to a two-way electronic communications system that permits two or more persons in different locations to engage in the equivalent of face-to-face audio and video communications. *Note:* Video teleconferences may be conducted as if all of the participants are in the same room. (188)

video teleconferencing unit (VTU): Equipment that performs video teleconference functions, such as coding and decoding of audio and video signals and multiplexing of video, audio, data, and control signals, and that usually does not include I/O devices, cryptographic devices, network interface equipment, network connections, or the communications network to which the unit is connected. (188)

view: In satellite communications, the quality or degree of visibility of a satellite to a ground station; *i.e.*, the degree to which the satellite is sufficiently above the horizon and clear of obstructions so that it is within a clear line of sight by an Earth terminal. (188) *Note:* A pair of satellite Earth terminals has a satellite in mutual view when both have unobstructed line-of-sight contact with the satellite simultaneously.

viewdata: A type of information-retrieval service in which a subscriber can (a) access a remote database via a common carrier channel, (b) request data, and (c) receive requested data on a video display over a separate channel. *Note:* The access, request, and

reception are usually via common carrier broadcast channels. *Contrast with* **teletext**.

violation: *See* **AMI violation**.

virtual call: A call, established over a network, that uses the capabilities of either a real or virtual circuit by sharing all or any part of the resources of the circuit for the duration of the call.

virtual call capability: A service feature in which (a) a call set-up procedure and a call disengagement procedure determine the period of communication between two data terminal equipments (DTEs) in which user data are transferred by the network in the packet mode of operation, (b) end-to-end transfer control of packets within the network is required, (c) data may be delivered to the network by the call originator before the call access phase is completed, but the data are not delivered to the call receiver if the call attempt is unsuccessful, (d) the network delivers all the user data to the call receiver in the same sequence in which the data are received by the network, and (e) multi-access DTEs may have several virtual calls in progress at the same time. *Synonym* **virtual call facility**.

virtual call facility: *Synonym* **virtual call capability**.

virtual carrier frequency: In radio or carrier systems in which no carrier is transmitted, *e.g.*, single sideband or double sideband with suppressed carrier, the location in the frequency spectrum that the carrier would occupy if it were present. (188)

virtual circuit (VC): A communications arrangement in which data from a source user may be passed to a destination user over various real circuit configurations during a single period of communication. (188) *Note:* Virtual circuits are generally set up on a per-call basis and are disconnected when the call is terminated; however, a permanent virtual circuit can be established as an option to provide a dedicated link between two facilities. *Synonyms* **logical circuit, logical route**.

virtual circuit capability: A network-provided service feature in which a user is provided with a virtual circuit. *Note:* Virtual circuit capability is not

necessarily limited to packet mode transmission. For example, an analog signal may be converted to a digital signal and then be routed over the network via any available route.

virtual connection: A logical connection that is made to a virtual circuit.

virtual height: The apparent height of an ionized layer, as determined from the time interval between the transmitted signal and the ionospheric echo at vertical incidence. (188)

virtual instruction: *Synonym* **teletraining**.

virtual memory: In computer systems, the memory as it appears to, *i.e.*, as it is available to, the operating programs running in the central processing unit (CPU). *Note:* The virtual memory may be smaller, equal to, or larger than the real memory present in the system.

virtual network: A network that provides virtual circuits and that is established by using the facilities of a real network.

virtual path: *See* **virtual circuit**.

virtual reality: An interactive, computer-generated simulated environment with which users can interact using specialized peripherals such as data gloves and head-mounted computer-graphic displays.

virtual storage: The storage space that may be regarded as addressable main storage by the user of a computer system in which virtual addresses are mapped into real addresses. *Note:* The size of virtual storage is limited by the addressing scheme of the computer system and by the amount of auxiliary storage available, and not by the actual number of main storage locations.

virtual terminal (VT): In open systems, an application service that (a) allows host terminals on a multi-user network to interact with other hosts regardless of terminal type and characteristics, (b) allows remote log-on by local-area-network managers for the purpose of management, (c) allows users to access information from another host

processor for transaction processing, and (d) serves as a backup facility.

virus: An unwanted program which places itself into other programs which are shared among computer systems, and replicates itself. *Note:* A virus is usually manifested by a destructive or disruptive effect on the executable program that it affects.

visible spectrum: The region of the electromagnetic spectrum that can be perceived by human vision, approximately the wavelength range of 0.4 μm to 0.7 μm .

visual display unit (VDU): *See* **monitor**.

vitreous silica: Glass consisting of almost pure silicon dioxide (SiO_2). *Synonym* **fused silica**.

VLF: *Abbreviation for very low frequency. See electromagnetic spectrum.*

VNL: *Abbreviation for via net loss.*

V number: *Synonym normalized frequency (def. #1).*

vocoder: *Abbreviation for voice-coder.* A device that usually consists of a speech analyzer, which converts analog speech waveforms into narrowband digital signals, and a speech synthesizer, which converts the digital signals into artificial speech sounds. (188) *Note 1:* For COMSEC purposes, a vocoder may be used in conjunction with a key generator and a modulator-demodulator to transmit digitally encrypted speech signals over narrowband voice communications channels. These devices are used to reduce the bandwidth requirements for transmitting digitized speech signals. *Note 2:* Some analog vocoders move incoming signals from one portion of the spectrum to another portion.

vodas: *Acronym for voice-operated device anti-sing.* A device used to prevent overall voice-frequency singing in a two-way telephone circuit by ensuring that transmission can occur in only one direction at any given instant. (188)

vogad: *Acronym for voice-operated gain-adjusting device.* A device that has a substantially constant

output amplitude over a wide range of input amplitudes. (188)

voice band: *Synonym voice frequency.*

voice coder: *See vocoder.*

voice-data signal: *See quasi-analog signal.*

voice frequency (VF): Pertaining to those frequencies within that part of the audio range that is used for the transmission of speech. (188) *Note 1:* In telephony, the usable voice-frequency band ranges from approximately 300 Hz to 3400 Hz. *Note 2:* In telephony, the bandwidth allocated for a single voice-frequency transmission channel is usually 4 kHz, including guard bands. *Synonym voice band.*

voice frequency carrier telegraph (VFCT): *Synonym voice-frequency telegraph.*

voice-frequency (VF) channel: A channel capable of carrying analog and quasi-analog signals. (188)

voice frequency (VF) primary patch bay: A patching facility that provides the first appearance of local-user VF circuits in the technical control facility (TCF). (188) *Note:* The VF primary patch bay provides patching, monitoring, and testing for all VF circuits. Signals will have various levels and signaling schemes depending on the user terminal equipment.

voice-frequency telegraph (VFTG): A method of multiplexing one or more dc telegraph channels onto a nominal 4-kHz voice frequency channel. (188) *Synonym voice frequency carrier telegraph.*

voice grade: In the public regulated telecommunications services, a service grade that is described in part 68, Title 47 of the *Code of Federal Regulations [CFR]*. *Note:* Voice-grade service does not imply any specific signaling or supervisory scheme.

voice-operated device anti-sing: *See vodas.*

voice-operated gain-adjusting device: *See vogad.*

voice operated relay circuit: *Synonym* **vox.**

voice operated transmit: *Synonym* **vox.**

voice-plus circuit: *Synonym* **composited circuit.**

volatile storage: A storage device in which the contents are lost when power is removed.

volatility: *See* **data volatility.**

voltage standing wave ratio (VSWR): In a transmission line, the ratio of maximum to minimum voltage in a standing wave pattern. *Note:* The VSWR is a measure of impedance mismatch between the transmission line and its load. The higher the VSWR, the greater the mismatch. The minimum VSWR, *i.e.*, that which corresponds to a perfect impedance match, is unity. (188)

volt-amperes reactive (vars): In alternating-current power transmission and distribution, the product of the rms voltage and amperage, *i.e.*, the apparent power, multiplied by the sine of the phase angle between the voltage and the current. *Note 1:* Vars represents the power not consumed by a reactive load, *i.e.*, when there is a phase difference between the applied voltage and the current. *Note 2:* Only effective power, *i.e.*, the actual power delivered to or consumed by the load, is expressed in watts. Volt-amperes reactive is properly expressed only in volt-amperes, never watts. *Note 3:* To maximize transmission efficiency, vars must be minimized by balancing capacitive and inductive loads, or by the addition of an appropriate capacitive or inductive reactance to the load.

volume: A portion of data, with its physical storage medium, that can be handled conveniently as a unit. *Note:* An example of a volume is a "floppy" diskette.

volume unit (vu): A unit of measurement of the power of an audio-frequency signal, as measured by a vu meter. (188) *Note 1:* The vu meter is built and used in accordance with American National Standard C16.5-1942. *Note 2:* When using the vu meter to measure sine wave test tone power, 0 vu equals 0 dBm.

vox: An acoustoelectric transducer and a keying relay connected so that the keying relay is actuated when sound, or voice, energy above a certain threshold is sensed by the transducer. *Note:* A vox is used to eliminate the need for push-to-talk operation of a transmitter by using voice energy to turn on the transmitter. (188) *Synonyms* **voice operated relay circuit, voice operated transmit.**

V reference point: The interface point in an ISDN environment between the line termination and the exchange termination.

VSb: *Abbreviation for* **vestigial sideband.** *See* **vestigial sideband transmission.**

V-series Recommendations: Sets of telecommunications protocols and interfaces defined by CCITT (now ITU-T) Recommendations. *Note:* Some of the more common V.-series Recommendations are:

V.21: A CCITT Recommendation for modem communications over standard commercially available lines at 300 b/s. This protocol is generally not used in the United States.

V.22bis: A CCITT Recommendation for modem communications over standard commercially available voice-grade channels at 2,400 b/s and below.

V.32: A CCITT Recommendation for modem communications over standard commercially available voice-grade channels at 9.6 kb/s and below.

V.32bis: A CCITT Recommendation for modem communication over standard commercially available voice-grade channels at 14.4 kb/s and below.

V.34: An ITU-T Recommendation for modem communication over standard commercially available voice-grade channels at 28.8 kb/s and below.

V.42: A CCITT Recommendation for error correction on modem communications.

FED-STD-1037C

V.42bis: A CCITT Recommendation for data compression on a modem circuit.

V.FAST: A new CCITT Recommendation for high-speed modems currently under development.

VSWR: *Abbreviation for voltage standing wave ratio.*

vu: *Abbreviation for volume unit.*

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