

# Ready for Convergence: IT Management and Technologists

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Convergence confusion, fragmented staff, and future-proofing . . . we face them every 3 years! Convergence is a cultural change, not just a new way of building an IT environment. The rapid integration of what were separate technologies into a converged environment affects IT management and staff. Can you— how do you—future-proof the IT organization? Cross training in multiple technologies has become the mandatory answer.

## Replace Technology Segregation with Cross Training

Deployment of converged networks is rapidly expanding into educational institutions. The staffing necessary for successful implementation usually does not exist.

Although existing organizational structures may have a common management point in the CIO, the staff is highly segregated by technology. This explains why there were nearly 3 million voice network technologists and more than 2 million data technologists employed in 2001. Telecom/voice personnel know little about data networks, servers, or applica-

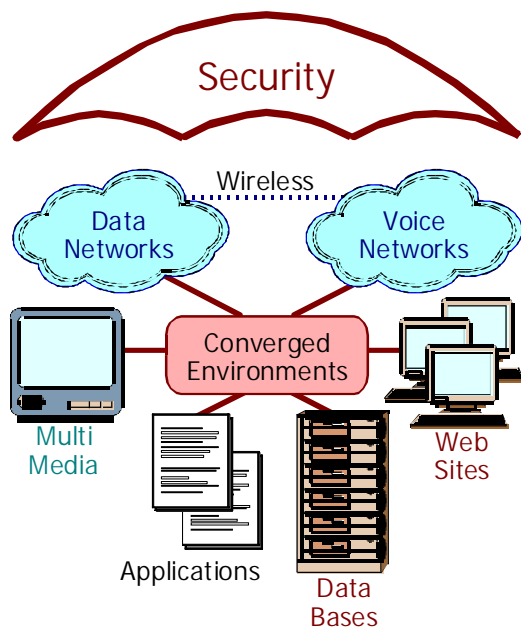
tions. And, aside from the phones on their desks, data network personnel are generally unfamiliar with telecom technology. They also have little knowledge of the servers and applications running on their data networks. Applications personnel have limited knowledge of data networks and no knowledge of telecom/voice networks. Wireless networks add to the complexity and skills requirements. Those responsible for security *must* understand all of these technologies.

Managing these segregated groups presents quite a challenge. Management is not required to bridge the knowledge gap among these groups but must make business decisions using converged network technologies. Because most people in management are removed from the nuts and bolts of technology, they will have an even harder time adjusting to the major decisions and changes that will occur with a converged environment.

To operate effectively, the segregated groups must be cross-trained in each other's technologies, and management must step forward and be educated in the deployment of converged networks and applications. Defining the knowledge and skills necessary to fulfill this need requires considerable study and analysis. Personnel must be assessed with vendor-neutral certification in mind.

An education plan must be designed to help both management and technologists obtain the knowledge

## Convergence Management



needed to make convergence function optimally. This plan should include training and certification programs to fulfill the need for convergence knowledge. Cross training in convergence technologies will not only reduce the risk of moving to converged networks, speed up implementation, and deliver success, it will also reduce real costs through the ability to make proper choices and avoid mistakes in convergence. There will be financial as well as intrinsic value to convergence cross training.

#### Global Skills X-change

Global Skills X-change (GSX; [www.gskillsxchange.com](http://www.gskillsxchange.com)) designs and evaluates customized implementation strategies of standards-based tools and protocols that can be used to realize a “national” system of standards and certifications for convergence. As a successor organization of the National Skills Standards Board (NSSB), GSX is charged with adopting and adapting the work of the NSSB to meet the needs of the knowledge-based economy.

GSX is currently providing technical leadership and assistance to the Information and Communications Technology (ICT) Voluntary Partnership in the completion of the ICT skills standards. This skills standards development project, started under the auspices of the NSSB, has as its fundamental premise the convergence of two worlds, IT and telecommunications.

The project is divided into three phases according to Joe Lualhati, PhD, director of research and development at GSX ([jlualhati@gskillsxchange.com](mailto:jlualhati@gskillsxchange.com)). The first phase included reviewing hundreds of existing job analyses and role delineation studies, the results of

which were verified using focus groups of industry-thought leaders and senior subject-matter experts. The project has identified seven concentrations of frontline work in this converged world: database development and administration, Web development and administration, technical writing, network devices, network infrastructure, programming, and digital media. For each of these concentrations of work, the project has identified critical work functions (major roles and responsibilities), key activities (major tasks associated with the performance of each critical work function), and performance indicators (evaluative information on how to determine when someone is performing each key activity competently). In total, there are 37 critical work functions and 250 key activities. Each key activity includes, on average, six to eight performance indicators.

Educational institutions can use this information to fully define the knowledge and skills requirements of targeted ICT jobs. Institutions can use the critical work function information to define the jobs. Once jobs are defined, the database can automatically provide firms with information, not only about the knowledge and skills required to perform those critical work functions but also concerning the level of knowledge and skills that individuals will need to perform the critical work functions in a competent manner. Instead of focusing on the different technologies (e.g., voice vs. data) as the defining characteristics of their work force, colleges and universities should focus on the work that needs to be done. Once defined, the ICT skills standards can provide information

about the knowledge and skills required to perform that work in a converged world. Although this will mean potential cross training of the institutions' workforce, it will prevent them from having two or more distinct workforces performing overlapping functions or competing for jobs and resources.

The second phase of the skills standards development project consisted of further verifying the initial results of this study through four sets of regional focus groups with ICT subject-matter experts. It also included enumeration of the worker component of the skills standards. The technical knowledge and skills relevant to the performance of the work were defined in phase 1. Currently, the project has identified 68 categories of technical knowledge and skills relevant to the converged world. These categories consist of knowledge and skills (a total of 557 skills specific and relevant to the converged world) as defined in the seven concentrations of work.

The third, ongoing phase of the GSX project consists of further verification of this information using survey methodology. Participants are being asked to verify both the work- and worker-oriented components of the skills standards. Once completed, this phase of the project will result in a database that links specific knowledge and skills (including NSSB's list of 17 academic and usable knowledge and skills) to critical work functions. It will represent the first enumeration of frontline work and relevant knowledge and skills associated with the converged world. ►

## What Is a Certificate?

Certifications are frequently confused with certificates. The latter is another form of a credential that documents the fact that an individual has successfully completed a class or program. The definition of “successful completion” varies from one program to another. For most, successful completion is defined in terms of attendance. An individual need not successfully pass an assessment to obtain a certificate. As such, certificates do not provide third-party, objective validation of the knowledge and skills required to perform specific roles and/or work behaviors.

### GW Solutions Experience

GW Solutions (GWS; [www.gw-solutions.com](http://www.gw-solutions.com)) is an enterprise of George Washington University. GWS provides training solutions and certificate programs in a number of disciplines. They also offer stackable credentials that can lead to academic credit. Interfacing with the newly created College of Professional Studies (CPS), these credentials can be applied to graduate degrees in faster-moving, technology-driven fields. CPS, along with GWS, was created for this purpose.

P.J. Mondin, the CTO for GWS, previously managed communications programs as the director of telecommunications networking and defense programs, which offered certificates in telecommunications engineering and included track courses in advanced networks, telephony, and multimedia in addition to traditional telecom courses. The program reached more than 300 students, and about 100 finished the program between 1999 and 2001. The attendees were from government, defense, contractor, and carrier organizations.

This program, however, did not specifically focus on converged networks. According to Mondin, “The students initially focused on the technologies directly related to their jobs. As the program progressed, the students requested a broader range of subjects that were peripheral to their work. The students independently created a course series that seemed to predict that converged network knowledge and skills would be important in the future, even though convergence was not yet a major technology direction.”

GWS has developed convergence cross-training programs based on its experience with the previous programs. The federal government, under an H1B grant, sponsored their first convergence-training offering. The H1B grant program funds free technology training to companies in the United States so that these companies do not need to hire foreign workers to fill open technology positions in the U.S. This GWS program trained physical plant installers on networking technology and products. CompTIA and Cisco exams were used as the assessment tools for this program.

The new GWS convergence program, called “Cross Training = Success,” is directed toward enterprises and government agencies. It provides three educational tracks:

1. Data networking and applications for telecom staff
2. Telecom networks for data and applications staff
3. Management in a converged environment

This program is operated in the belief that not only do technologists need cross training, but management must also be up-to-date on the technical, business, and financial issues

they will face. Mondin says, “I do not know of any training program in convergence that is so focused on the two different worlds of technology [data and voice], at the same time including management training.”

### Defining Convergence Certification

An understanding of certification’s value proposition, as part of a larger system of credentials, begins with an understanding of what it is and what it is not. Certifications differ from skills standards, certificates, assessments, and licenses. Within the ICT industry, certifications are industry-accepted credentials voluntarily obtained from professional associations, trade and/or industry associations, and firms or proprietary organizations. An individual’s knowledge and/or skill in a particular subject area is verified against a set of predetermined standards by means of an assessment. The assessment provides an impartial, third-party verification of a person’s expertise, and industry-driven, tangible evidence of that person’s achievement of necessary proficiency levels. Certifications formally attest to, and publicly recognize, an individual’s attainment of the knowledge and skills required for a specific role within an occupational cluster or across an industry sector.

Certifications are similar to licenses in that both are credentials that provide formal verification that an individual has met a predetermined proficiency standard associated with specific knowledge and skills relevant to a particular role. However, licenses are granted to individuals solely by state governmental agencies to regulate the practice of a profession for the purpose of the protection of the public. They are mandatory for certain professions in certain states, and they provide individuals the right to practice.

Certifications, on the other hand, are voluntary, are granted by industry stakeholders, and only provide individuals title protection (e. g., being able to call oneself an MCSE) or right to title (i.e., title control) and not a formal right to practice.

#### Assessments for Certificates

Finally, assessments, although a critical element of the process that results in attaining a certification (hereafter “certification process”) should also not be confused with certifications. Assessments are instruments used to measure an individual’s standing with respect to a specific set of knowledge and skills. To be used in a certification process, assessments must be reliable, valid, objective, unbiased, and criterion referenced. It is important to note that there are proprietary firms currently offering assessments (at times under the guise of certifications) of work-related knowledge and skills that do not lead to certifications as defined previously.

To differentiate between offerings that are questionable certifications and true certifications, the institution needs to look closely at the supporting mechanisms:

1. Procedures for identifying skills standards
2. Procedures for accrediting curriculum
3. Validation of corresponding assessment tools
4. Objectivity of administration protocols
5. Reliability of protocols for ensuring data security
6. Mechanisms for tracking compliance, candidate verification, and recertification associated with the certification process.

#### Who Else is in the Game?

There are a few programs that venture to provide vendor-neutral convergence training. Their quality, depth, length, and assessment measurements vary considerably. Some are as short as a 1-day course with a 40-question exam.

The Telecommunications Industry Association (TIA; [www.tiaonline.org](http://www.tiaonline.org)) created the best-known program. It has developed two certification programs for those who are going to sell or service convergence technologies. One of these, Convergence Technologies Professional (CTP), is a 5-day course with a single 65-question proctored exam. The other, Certified in Convergent Network Technologies (CCNT), is a self-paced, Web-based study program with six exams comprising a total of 450 questions. Several vendors, as a stepping stone to their product training, endorse both the CTP and CCNT programs. The CTP program is taught by training vendors who are independent of TIA.

#### Where Are We Now?

Currently, there are both vendor-specific and vendor-neutral certifications in the ICT world. The former comprises certification programs from such companies as Microsoft, Avaya, and Cisco, which focus on specific products and the knowledge and skills required to operate and work with those products. The latter focuses on foundational knowledge and skills that underlie the technologies associated with the products themselves (e.g., CompTIA).

For the most part, proprietary firms and/or product/service vendors, such as Microsoft and Cisco, offer vendor-specific certifications. Vendor-neutral certifications are offered by trade associations, such as CompTIA,

## Where Do Skills Standards Fit?

Certifications should not be confused with skills standards. Skills standards are performance specifications that identify the knowledge and skills an individual needs to succeed in the workplace. They delineate what a person must know and be able to do in order to perform related work successfully at a specific job, within an occupational cluster, or across an industry sector. Quality certifications are based on skills standards, but they are not *the* skills standards per se. Instead, certifications provide formal documentation that an individual, by successfully passing an assessment (or a battery of assessments), has met the performance specifications identified in the skills standards.

professional associations (IEEE), or academic institutions. The ICT certification landscape is dominated by data and application, but not convergence, certifications. Of the top 50 certifications in 2003, based on volume, only one, Avaya, focuses on telecom knowledge and skills.

The educational institution is in the same predicament as enterprises, government, and vendor organizations. All are facing the same issues with convergence. Although future-proofing the IT organization may never be possible, all organizations have to face the fact that without cross training, convergence success will be a difficult and costly goal to attain.

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