IT Skills Inventory

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The Most Important IT Skills

1. Application Development

Computer Languages

Programming Languages: Java, C, C++, C#
Server Scripting: JSP, ASP, PHP, Perl
Client Scripting: JavaScript, AJAX, VBScript, HTML
Query Language: SQL, PL/SQL (Oracle), Transact-SQL

Development Tools

Microsoft Visual Studio .NET
Borland JBuilder (Java IDE)
Oracle JDeveloper
NetBeans (Java IDE)
Sybase PowerBuilder
Borland Delphi
Eclipse (open source IDE)

Application Servers

IBM WebSphere
BEA WebLogic
Oracle Application Server
Oracle Fusion
Sybase EAServer
JBoss (open source)

Framework

Microsoft .NET Framework
J2EE – Sturts (open source)
Java Service Face (JSF)
Ruby on Rails

Application Design Skills

UML
Distributed architecture – tiers and layers
Design patterns (GoF)
Service oriented architecture (SOA)
XML Web services and interoperability
Design tools – Rational Rose, Borland Together

Web Design Tools

Microsoft FrontPage
Dreamweaver
ColdFusion

Reporting Tools

Crystal Reports
Actuate (http://www.actuate.com/)

2. Systems and Network

Operating Systems

Microsoft Windows 2000, XP, 2003, Vista
UNIX: Sun Solaris 10
UNIX: HP-UX 11i
Linux: Red Hat Enterprise Linux (RHEL) V.4
Linux: Novell SUSE Linux 10.0

Network

TCP/IP
Novell Netware
Ethernet, LAN, WAN, WLAN
VoIP, telephony
VPN (Virtual private network)

Security

SSL & HTTPS
Firewall
VPN (Virtual private network)

Configurations

RAID5
SAN
Clusters, failover, load balancing
Grid copmputing
Microsoft Exchange Server
Active Directory (AD)
Lotus Notes

Web Servers

Apache
Tomcat (JSP/Servlet server)
Microsoft Internet Information Server (IIS)

3. Database and BI

DBA Skills

Database server administration
SQL programming
Performance tuning
Backup and recovery
ETL (extract, transform, load)
Database design (logical design, physical design)
Data modeling (ERD – entity relationship diagram)
Database replication
Data warehousing

RDBMS Technologies

Oracle 8i/9i/10g

IBM DB2 UDB
Sybase ASE
Microsoft SQL Server
Teradata (VLDB from NCR)
ADABAS (legacy database from Software AG)

Database Tools

Embarcadero DBArtisan 8.0
Quest Software – TOAD
Oracle Enterprise Manager

Business Intelligence

SAS (www.sas.com)
Business Objects XI (http://www.businessobjects.com/)
Cognos 8 Business Intelligence (http://www.cognos.com/)
Hyperion System 9 BI+ (http://www.hyperion.com/)

4. Packaged Software

Enterprise Software

ERP – enterprise resource planning
CRM – customer relationship management
PLM – production lifecycle management
PRM – partner relationship management
SCM – supply-chain management
SRM - Supplier Relationship Management
PDM – product data management
PSA – professional services automation

Commercial-Off-The-Shelf (COTS)

SAP (ERP)
Siebel eBusiness (CRM)
Oracle E–Business Suite
PeopleSoft Enterprise (ERP)
JD Edwards EnterpriseOne (ERP)
TeamCenter (PLM from UGS)

MAXIMO (Asset Management Software from MRO Software)

GIS

ArcView
ArcInfo
MapInfo
MapGuide
GRASS
Blacklands GRASS
Autodesk MapGuide
AutoCAD MAP

5. Soft Skills

Planning and Management

Integration planning and strategy
Consolidation planning and management
Data center management
Project management
Proposal writing
Contract negotiation

Interpersonal

Communication skills – verbal and writing
Team work
Staff supervisory
Presentation skills
Learning ability

Software Development Life-Cycle

The common standard software development life-cycle (SDLC) includes ten phases during which defined IT work products are created or modified. The tenth phase occurs when the system is disposed of and the task performed is either eliminated or transferred to other systems. Not every project will require that the phases be sequentially executed. However, the phases are interdependent. Depending upon the size and complexity of the project, phases may be combined or may overlap.

1. Initiation Phase

The initiation of a system (or project) begins when a business need or opportunity is identified. A Project Manager should be appointed to manage the project. This business need is documented in a Concept Proposal. After the Concept Proposal is approved, the System Concept Development Phase begins.

2. System Concept Development Phase

Once a business need is approved, the approaches for accomplishing the concept are reviewed for feasibility and appropriateness. The Systems Boundary Document identifies the scope of the system and requires Senior Official approval and funding before beginning the Planning Phase.

3. Planning Phase

The concept is further developed to describe how the business will operate once the approved system is implemented, and to assess how the system will impact employee and customer privacy. To ensure the products and /or services provide the required capability on time and within budget, project resources, activities, schedules, tools, and reviews are defined. Additionally, security certification and accreditation activities begin with the identification of system security requirements and the completion of a high-level vulnerability assessment.

4. Requirements Analysis Phase

Functional user requirements are formally defined and delineate the requirements in terms of data, system performance, security, and maintainability requirements for the system. All requirements are defined to a level of detail sufficient for systems design to proceed. All requirements need to be measurable and testable and relate to the business need or opportunity identified in the Initiation Phase.

5. Design Phase

The physical characteristics of the system are designed during this phase. The operating environment is established, major subsystems and their inputs and outputs are defined, and processes are allocated to resources. Everything requiring user input or approval must be documented and reviewed by the user. The physical characteristics of the system are specified and a detailed design is prepared. Subsystems identified during design are used to create a detailed structure of the system. Each subsystem is partitioned into one or more design units or modules. Detailed logic specifications are prepared for each software module.

6. Development Phase

The detailed specifications produced during the design phase are translated into hardware, communications, and executable software. Software shall be unit tested, integrated, and retested in a systematic manner. Hardware is assembled and tested.

7. Integration and Test Phase

The various components of the system are integrated and systematically tested. The user tests the system to ensure that the functional requirements, as defined in the functional requirements document, are satisfied by the developed or modified system. Prior to installing and operating the system in a production environment, the system must undergo certification and accreditation activities.

8. Implementation Phase

The system or system modifications are installed and made operational in a production environment. The phase is initiated after the system has been tested and accepted by the user. This phase continues until the system is operating in production in accordance with the defined user requirements.

9. Operations and Maintenance Phase

The system operation is ongoing. The system is monitored for continued performance in accordance with user requirements, and needed system modifications are incorporated. The operational system is periodically assessed through In-Process Reviews to determine how the system can be made more efficient and effective. Operations continue as long as the system can be effectively adapted to respond to an organization's needs. When modifications or changes are identified as necessary, the system may reenter the planning phase.

10. Disposition Phase

The disposition activities ensure the orderly termination of the system and preserve the vital information about the system so that some or all of the information may be reactivated in the future if necessary. Particular emphasis is given to proper preservation of the data processed by the system, so that the data is effectively migrated to another system or archived in accordance with applicable records management regulations and policies, for potential future access.

Software development life cycle is defined at Wikipedia as:
http://en.wikipedia.org/wiki/Software_development_life_cycle

The 7 Layers of Network

Network administrators, network engineers, and systems administrators should understand the network architecture described as the 7 Layers of the OSI Model. The OSI, or Open System Interconnection, model defines a networking framework for implementing protocols in seven layers. Control is passed from one layer to the next, starting at the application layer in one station, proceeding to the bottom layer, over the channel to the next station and back up the hierarchy.

Layer 7 – Application

This layer supports application and end-user processes. Communication partners are identified, quality of service is identified, user authentication and privacy are considered, and any constraints on data syntax are identified. Everything at this layer is application-specific. This layer provides application services for file transfers, e-mail, and other network software services. Telnet and FTP are applications that exist entirely in the application level. Tiered application architectures are part of this layer.

Layer 6 – Presentation

This layer provides independence from differences in data representation (e.g., encryption) by translating from application to network format, and vice versa. The presentation layer works to transform data into the form that the application layer can accept. This layer formats and encrypts data to be sent across a network, providing freedom from compatibility problems. It is sometimes called the syntax layer.

Layer 5 - Session

This layer establishes, manages and terminates connections between applications. The session layer sets up, coordinates, and terminates conversations, exchanges, and dialogues between the applications at each end. It deals with session and connection coordination.

Layer 4 - Transport

This layer provides transparent transfer of data between end systems, or hosts, and is responsible for end-to-end error recovery and flow control. It ensures complete data transfer.

Layer 3 – Network

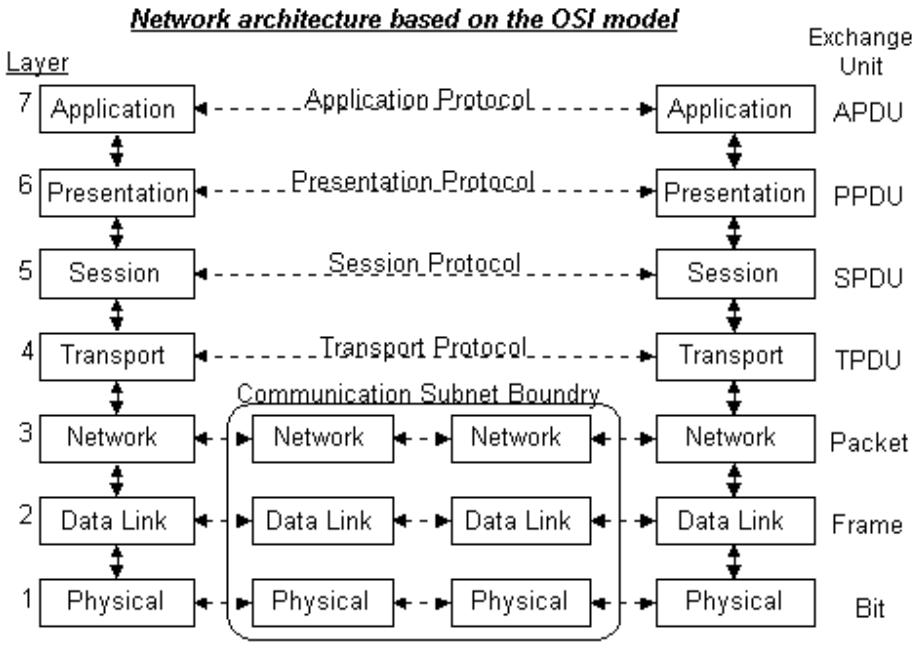
This layer provides switching and routing technologies, creating logical paths, known as virtual circuits, for transmitting data from node to node. Routing and forwarding are functions of this layer, as well as addressing, internetworking, error handling, congestion control and packet sequencing.

Layer 2 - Data Link

At this layer, data packets are encoded and decoded into bits. It furnishes transmission protocol knowledge and management and handles errors in the physical layer, flow control and frame synchronization. The data link layer is divided into two sublayers: The Media Access Control (MAC) layer and the Logical Link Control (LLC) layer. The MAC sublayer controls how a computer on the network gains access to the data and permission to transmit it. The LLC layer controls frame synchronization, flow control and error checking.

Layer 1 - Physical

This layer conveys the bit stream - electrical impulse, light or radio signal -- through the network at the electrical and mechanical level. It provides the hardware means of sending and receiving data on a carrier, including defining cables, cards and physical aspects. Fast Ethernet, RS232, and ATM are protocols with physical layer components.



More information about OSI model can be found at Wikipedia:
http://en.wikipedia.org/wiki/OSI_model