COMMSCOPE®

SYSTIMAX® Solutions

Implementation Methodology for iPatch® System

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at work

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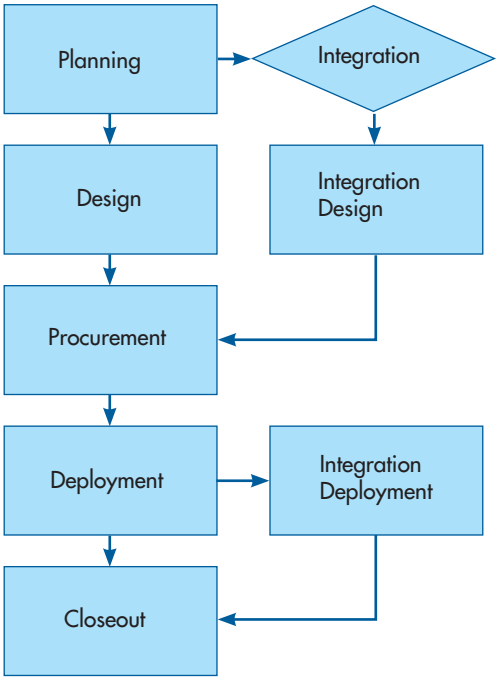
1 Introduction

iPatch System is a complex product that consists of passive cabling hardware components, active electronics, and management software. This system is designed to work in diverse corporate network environments. These factors clearly differentiate iPatch System from any traditional structured cabling system. The iPatch system is designed to provide end users with variety of benefits that would lead to improvements in operational efficiency of IT departments, increased physical security of the network, and overall improvement of corporate productivity through reduction of network downtime. The realization of these benefits requires a thorough and complete implementation of the system. The system must be in place and fully operational on a day when a customer schedules to turn the system live.

To ensure all necessary steps are taken to guarantee an acceptable level of workmanship and customer satisfaction during an iPatch implementation, CommScope has developed The Implementation Methodology for iPatch. It contains clearly outlined phases required for a successful competition of iPatch project. Whereas there are clear phase definitions with boundaries, this doesn't mean that parts of different phases cannot run concurrently (for example, the parts of the Planning phase clearly could overlap with Design phase).

By following this methodology and the steps outlined within it, the end customer will be exposed to a premier brand experience from the outset. In addition it helps SYSTIMAX BusinessPartners and System Integrators to follow a proven and smooth implementation path from both a technical and organizational points of view.

The flow diagram below shows the phases from planning to hand over for an iPatch System.



2 General Information

2.1 Audience

This document is intended for the following audiences:

- SYSTIMAX BusinessPartners
- End Users/Customers
- CommScope Technical Managers (TM), Territory Sales Managers (TSM)

2.2 Scope

The purpose of this document is to define the implementation methodology for an iPatch System. The methodology takes place after a customer makes decision to deploy iPatch and after the contract is awarded to a BusinessPartner. At this time, this document will not outline the bid process. However, this document should be used by customers and BusinessPartners to properly assess the magnitude of the project when preparing for bid process

2.3 How to Use This Document

Each phase has a description and a set of deliverables that are usually needed for the next phase. As mentioned previously, some phases will progress concurrently.

3 Planning Phase

Description:

During the **Planning Phase** all applicable information is collected for proper implementation of SYSTIMAX Intelligent Infrastructure Solutions (iPatch). The business, operational and system requirements are defined and documented. From this the initial **Project Scope** and **Statement of Work** are created and agreed upon by all parties involved. Key team members for the project are identified and preliminary dates are assigned to major milestones in the **Project Plan**.

3.1 Planning Phase Inputs

- Customer Information
  - o Name
  - o Location
  - o Contact info (include all possible contacts like for purchasing, project management, decision maker, network administrator, IT managers, etc.)
- BusinessPartner Information (include names of all BusinessPartners that would be involved in a project)
  - o Name
  - o Location
  - o Contact info
- CommScope Technical Manager or iPatch Technical Consultant
  - o Name
  - o Location
  - o Contact info

3.2 Site Survey

Collect all relevant information that is needed to correctly assess amount of effort for system/database setup

3.2.1 Office Application

- Number of floors
- Number of rooms/cubicles per floor
- Number of IDFs/Number of racks per IDF
- List of services: VoIP, Data, Analog Voice, Wi-Fi, etc.
- Number of cable runs per room/per service
- Number of faceplates per room/cubical
- Number of jacks per faceplate/per service
- Number of patch panels per rack
- Number of switches per IDF
- Number of copper ports per switch
- Number of Fiber back bone cable runs per IDF
- Number of fiber switch ports in MDF

3.2.2 Data Center Application

- Room/Zone/POD arrangement
- Number of rack(cabinet) rows per room/zone/pod
- Number of racks per row
- Number of racks with servers
- Number of servers per rack
- Number and type of ports per server
- Number of panel ports per server rack
- Number of fiber cable runs per rack
- Number of fiber patch panels per rack
- Number of switches per room/zone/pod
- Number of copper ports per switch
- Number of fiber ports per switch
- Number of racks with data storage equipment
- Number of fiber ports per Data storage equipment
- Number of fiber ports per data storage equipment rack

3.2.3 Outside Plant (OSP) Application

- Number of buildings
- Number of cable vaults
- Number of conduits per cable vault
- Number of copper splice enclosures per cable vault
- Number of fiber splice enclosures per cable vault
- Number of splice trays per splice enclosure
- Number of splice positions per splice tray
- Number of terminated fiber strands per splice tray
- Number of spare fiber strands per splice tray
- Number of patch panels per building that are cabled to OSP

3.2.4 Common Components

- Cord organizers
- Rack layout
- PoE devices
- Wireless Access Points
- Environmental condition monitoring devices
- KVM switches
- Modems
- Routers
- IP video cameras
- VoIP phones
- Analog phones
- Printers and Multifunctional Devices
- Fax machines
- Networked Copy machines
- Scanners

3.3 iPatch System Configurations & Trade-off Analysis

- Centralized vs. Distributed iPatch server arrangements (campus/branch offices/multi site arrangements)
- SQL Server Express (provided with System Manager (SM) software) vs. SQL server (full version of SQL application provided by a customer)
- Co-located iPatch database with SM software (default configuration) vs. Separate iPatch database server
- Failover considerations:
  - Two System Manager servers with collocated database: primary and backup(offline)
  - Two System Manager servers (primary and backup(offline)) and a separate database server
  - One System Manager server with two database servers :primary and backup (requires to use SQL replication tools to keep backup database current)
  - Virtual server (requires to use management software for Virtual Servers to relocate virtual server as a failover mechanism)
- Backup requirements (keep database backup files on iPatch server pc vs. backup to a data storage server/another computer)
- Remote administration (number of remote sites, available WAN bandwidth, leased vs. owned WAN trunks, etc.)
- Cross-connect vs. Interconnect trade-offs (create diagrams for each arrangement, explain workflow differences, analyze effect of each configuration on service provisioning feature)
- Budgetary price comparisons between various configurations
- Identify method for entering initial information about a site into iPatch database: direct vs. import utility (if import utility is used, prepare excel template formatted for use with iPatch import utility)

3.4 Customer IT Workflow Process Analysis

- Study of the existing IT administration workflow
- Engage customer to determine best way to either integrate iPatch into existing IT workflow or to recommend a new workflow that would take advantage of iPatch System features/ capabilities
- Evaluate customer needs for Integration with existing software applications. If required then:
  - Document application's type and name
  - Document customer's desired needs/integration features
  - Identify application's maker
  - Determine if application support is provided by a software vendor for this existing application or by Systems Integrator
  - Identify Systems Integrator that is providing application support, or
  - If it is a brand new implementation, identify Systems Integrator that is considered by a customer
  - Contact that a software vendor or Systems Integrator to explore possibility of getting the software integration completed by them
  - If neither software vendor nor Systems Integrator are interested, then identify other possible system/software integrator

3.5 System Manager Software Configuration

- Collect information about number/type of iPatch System users
- Determine if floor plan drawings need to be imported in to iPatch database. If so define which objects would need to be populated on the floor plan view in a database
- Determine if floor plans need to be associated with floors, rooms or both
- Determine if campus drawings, aerial photos and cable vault drawings need to be imported in iPatch database for documenting OSP cabling
- Identify a source for providing CAD drawings and photos
- Compile Services list (VLAN definitions, service names or labels)
- Determine if server templates would be used to document different server configurations
- Determine if server images would need to be associated with each server template
- Identify a source for providing server configuration information and server images (server images could either be vendor produced diagrams, Visio or CAD generated drawings, or photos)
- Determine if user defined fields would be used for Rack properties and Server properties. If so define information that would be tracked by these fields

Study topology of a data center to determine if Service Paths would be needed, if so, (how would they be defined?) define them, and determine a number that would be required.

Determine If there is a possibility to adjust cabling topology to improve efficiency of iPatch Service Provisioning feature by using fewer/or eliminating need for service paths.

- Service Provisioning/Patching
- Determine if SNMP Switch port monitoring (RO)/Switch port management (RW) need to be implemented, if so, define polling settings
- Compile a list of switch brand and model number that is planned to be deployed and integrated with iPatch System
- Determine if SNMP Device Discovery is required by a customer, if so, define discovery method (auto/manual and its settings)
- Compile a list of networked device types that have to be discovered by iPatch Device Discovery
- Determine if MAC Address range would need to be used to automatically identify types of discovered devices
- Determine if Managed VLAN feature would be used. If so then identify at what level VLAN to Services mapping would need to be created
- Determine if Managed PDUs will be deployed
- Determine if managed devices in racks would have to be setup in iPatch
- Compile a list of type, and brand with model number of managed devices in racks to be setup in iPatch
- Determine what type of reports would be required for iPatch system to generate
- Determine what type of alerts would need to be generated

3.6 Check Lead Times for iPatch Equipment

- Identify SYSTIMAX distributor that is supporting this iPatch project
- Compile a list with a number, type, Material IDs (MIDs) of iPatch components that would be required for this project
- Submit the above list with a request for availability check/lead times to designated SYSTIMAX distributor that is supporting this project
- Based on customer schedule, estimate required delivery schedule for iPatch components
- Determine if product availability information provided by distributor would be consistent with estimated required delivery schedule
  - If it is, then identify when purchased order for iPatch components would have to be placed
  - If it is not, then it has to be communicated to a customer as soon as possible in order to explore strategy for addressing this issue (one possibility could be staging deployment schedule)
- Update Project Schedule

3.7 Evaluate Training Needs

- Determine and document customer needs for training:
  - Identify system administrators and system users. Define training needs for each group
  - Certified training (SP5500, SP5502, SP5504, ND5510, SP5510R, and SP8810)

    SP5500 – SYSTIMAX iPatch Design and Engineering
    This Self-Paced web based course covers requirements specific to the SYSTIMAX iPatch product. Students will be involved in the design, selection and specification of the hardware and software. iPatch Installation requirements shall be demonstrated and practiced followed by a session to overview the System Manager software considerations and post installation hardware support.

    SP5503 – SYSTIMAX iPatch® Hardware Installation and Administration
    Online Self Paced Training. This course is for partners and customers who wish to maintain and administer iPatch hardware. It provides an iPatch component overview and hardware installation instructions for partners.

    ND5510 – SYSTIMAX iPatch System Manager Installation and Support
    The course provides detailed, hands-on instruction covering the initial setup as well as the day-to-day operation of the iPatch System Manager software. In addition to covering the basic operation of the software itself, the course explains the underlying design philosophy that governs System Manager's interactions with the iPatch hardware present at the customer site

    SP5510R – SYSTIMAX Certified iPatch Support Specialist - Recertification
    Online Self Paced Training. This course provides updated material and recertification for those originally trained in ND5510 iPatch Support Specialist. Maximum 1 year re-certification required. Students will have qualified for this course by attending either ND5510 Certified iPatch Support Specialist or this course previously. New revisions are continuously added to include topics covering the latest product features

    SP5504 – iPatch System Administrator training
    Online Self Paced Training. This course is intended for end users or for BusinessPartners that need to understand various software features in order to effectively use iPatch system for daily administration of cabling infrastructure.

SP8810 – SYSTIMAX Data Center Design
Online Self Paced Training. This course looks at Data Center Design in detail and how SYSTIMAX products (including iPatch) can be used within this specialist environment. The primary audience is for BusinessPartners, Consultants and Customers about to embark on or already involved in Data Center design projects. It covers Data Center fundamentals and planning considerations,

- BusinessPartner delivered tutorial upon handover. Duration and topics must be discussed and agreed upon with the end user.
- If Integration work is part if the project, evaluate training needs for integrated solution: who, when and how

3.8 Project Scope Definition

- Prepare Project Scope definition document based on information collected in 3.1 through 3.7.
  - Note: Project Scope definition document could be part of SOW rather than a separate document

- Project Scope Outputs
  - General Scope Statement
  - Scope and project acceptance criteria
  - Project deliverables
  - Scope Exclusion
    - Important to define what is NOT included in the SOW
  - Project constraints
  - Change control process

3.9 Estimate Project's Timeline/Plan

- Based on Project Scope Definition estimate approximate time needed for testing/validation of the system
- Estimate overall Project's timeline
- Draft preliminary Project Plan

3.10 Statement of Work (SOW) Creation

- Create SOW based on Project Scope Definition

- SOW should include project acceptance criteria
  - Work with a customer to define project acceptance criteria

    Note: Successfully passing necessary System/Acceptance Tests should be part of the project acceptance criteria
  - If Integration work is part of the project, work with a customer and Systems Integrator to determine acceptance criteria for the integrated solution

- If desired by a customer, include descriptions of any post "Closeout Phase" maintenance procedures that customer would like to be performed.

  Note: Any post "Closeout Phase" maintenance procedure is beyond the Project Scope, and therefore should be priced separately

3.11 Planning Phase Deliverables/Sign off Documents

1. SOW
2. Draft Project Plan
3. Draft Project Schedule

4 Design Phase

Description:

Prepare the functional specifications and define all necessary technical details. This information must be documented in the **System Design Document**. This document must include **System/Acceptance Test** plan. Testing is required to establish that the installed iPatch system is fully functional and meets all customer specifications/requirements. System Design Document should be reviewed with the customer project team. Customer needs to agree and sign off that the **System Design Document** is in line with and meets requirements as laid out in Statement of Work conceived during the **Planning Phase**. As more details are filled in and agreed upon, the Project Plan should be updated with resources, action items, milestones and applicable time-lines.

4.1 Design Phase Inputs

1. SOW
2. Draft Project Plan

4.2 System Manager Database Configuration

- Define installation method for System Manager (i.e. default, co-located SQL Server enterprise, split server)
- Define authentication mode for installing System Manager and SQL Server applications (see Appendix C for Application notes)
- Define number of iPatch panel ports that will be deployed to determine which iPatch software license to purchase
- Define System Manager database structure (sites, buildings, floors, rooms/cubicles, MDFs/IDFs, data center layout, etc.)
- Define if data would be populated into database via direct data entry or using Import Wizard utility
- Define implementation extent of SNMP device discovery feature
- Define and compile a list of switches (including blade server build-in switches) and managed PDUs along with its corresponding configurations. This task should be done independent of whether SNMP Device Discovery would be used or not. The list should include SAN switches if requested by a customer
    - **Note:** To verify switch compatibility with iPatch software, it is a good practice to provide SYSTIMAX with exact description of switch configuration along with a MIB Walk file prior to deployment of iPatch software. SYSTIMAX recommends that a MIB Walk file be provided for each configuration of a switch even if the switches are from the same model family (e.g. Catalyst 6509)
    - MIB Walk files should be generated using sapwalk.exe utility that is provided with iPatch software
    - Mib walk files need to be submitted to CommScope via InSite web portal

      Sapwalk utility should be run from command prompt:

      sapwalk [ip address] [read community string] [1.3] > [output file name]

      sapwalk is the name of the program

      [ip address] is the ip address of the switch

      [read community string] is the password that allows the program to read data from the switch

      [1.3] is the starting OID where the program will start to read the information.

      [output file name] is the name of the file where the results are stored.

- Define MAC ID range to enable automatic identification of device types during SNMP discovery
- Managed devices (PDUs, Wireless Access Points, Environnemental Monitors, PoE devices)
- Define if server objects would be manually created or discovered by SM
- If server objects have to be manually configured in a database, determine if server template feature will be used.
- Compile a list of all different configurations to be used including server images
- Define new device types if needed
- Define Event Notification configuration
- Define a list of events that need to be tracked
- Create Notification profiles
- Define system users and its privileges
- Define technician groups
- Define services list
- Define VLAN to Services mapping
- Define media type

4.3 Naming Conventions

- Define naming conventions for
  - rooms
  - racks
  - panels
  - panel ports
  - faceplates
  - jacks
  - servers
  - server ports
  - switches
  - switch cards
  - switch ports
  - conduits
  - cable vaults
  - splice enclosures
  - splice trays
  - splice tray positions
  - mainframes
  - blade servers
  - user defined fields for Rack Properties
  - user defined fields for Device/Server Properties
  - services

4.4 Cable Plant Design

- Define cable connectivity between panel ports and jacks in faceplates
- Define cable connectivity between panel ports and ports in consolidation points
- Define cable connectivity between PBX equipment and patch panel ports
- Define cable connectivity between patch panel ports
- Define cable connectivity between switch ports and panel ports
- Define conduits between buildings and cable vaults
- Define conduits between buildings
- Define conduits between cable vaults
- Define cable connectivity between panel ports and splice enclosures

4.5 Site-specific Installation Guidelines

Create site specific installation guidelines

- Define number of computers that would need to have iPatch client installation
  - o Determine whether client software would be installed using CD or from an iPatch server
- Define which port should be used for iPatch Web service
- Define who would collect hardware serial numbers needed for warranty
  - o Utilize SiteReport tool that is provided with System Manager software to generate a list of serial numbers for iPatch equipment along with a date when this equipment was synchronized with iPatch database for the first time.
- Ensure that racks with iPatch patch panels are not installed exposed to direct sun light/facing a window
- Define requirements for power provisioning during mounting and initial testing of iPatch equipment
  - o UPS or temporary power
- Identify if any special power adapters would have to be obtain to facilitate power connection to iPatch equipment to PDU
- Determine is redundant power option would be used. If so, ensure additional power supplies would be added to BOM.
- Define properties for rack objects in iPatch database
- Define which way iPatch equipment would be populated into iPatch database
  - o Manually via direct data entry into iPatch SM
  - o Manually via Excel Spreadsheet/iPatch Import Wizard utility
    - Note: Define if excel macro(s) need to be developed to expedite population of data into excel spreadsheet. Identify who will be responsible for this task
  - o Electronically via synchronization feature prior to LAN deployment
  - o Electronically via synchronization feature after LAN deployment
- Define when and who would be providing IP address for programming into iPatch Rack Manager Plus/Panel Manager with Network Manager
- Define whether the initial patching would be done using paper based instructions or iPatch electronic work orders(either through the direct data entry or through the Import Wizard utility)
  - o If electronic work orders to be populated into iPatch database using Work Import utility, ensure that either all racks or panels or panel ports have unique names in database
- To ensure that appropriate installation work flow is reflected in a Project Plan define whether patching is:
  - o Cross-connect patching using paper based schedule without LAN connection to iPatch database
  - o Cross-connect patching using paper based schedule with LAN connection to iPatch database
  - o Cross-connect patching using iPatch electronic work orders without LAN connection
  - o Cross-connect patching using iPatch electronic work orders with LAN connection to iPatch database

- Interconnect patching using paper based schedule without LAN connection to iPatch database
- Interconnect patching using paper based schedule with LAN connection to iPatch database
- Interconnect patching using iPatch electronic work orders with LAN connection to iPatch database

- Define who would be responsible for implementing initial patches
- Define who would be responsible for generating patching assignments. Include patching schedule with System Design Document
- Define the sequence for building data base – before LAN deployment or after
  - For before LAN deployment specify when the iPatch equipment needs to be synchronized with database – before or after cabling of patch panels
  - For after – specify whether iPatch equipment has to be synchronized before or after implementation of patch connections
- Define ports on each switch that would be used to connect to iPatch Network Manager

  Note: Due to documented problems with implementation of auto negotiation feature with some switches it is recommended to turn that feature off by setting switch port that would support iPatch Network Manager to full or half duplex and 100Mb/s mode
- Determine location for installation of iPatch panel bus in rack/cabinet. Mounting surface should be a continuous flat surface for the a full length of a panel bus
- Determine if location of a panel bus would require custom length panel jumpers. Make sure that use of custom length of panel jumpers is restricted to special cases only. Cost and lead times for special jumpers would have to be included in a decision making process.
- Define location for Network Manager to be on the first rack in iPatch daisy chain (also referred to as RM LAN)
- Define vertical position of Rack Manager/Panel Manager on each rack/cabinet
- Define who and when would be responsible for switch configuration:
  - assigning IP address
  - assigning SNMP community strings (RO/RW)
  - switch setup to send SNMP traps to iPatch server
  - setting up security levels to allow iPatch server to have access to Bridge MIB
- Define who and when would be responsible for router configuration:
  - assigning IP address
  - assigning SNMP community strings (RO)
  - setting up security levels to allow iPatch server to have access to ARP table

4.6 Floor Plan and OSP layout Drawings

- Collect electronic files for all floor plan/campus drawings that would be required for database creation
- Define SM objects that need to be placed on floor plans/campus layout

4.7 Equipment Definition

- Define all iPatch and non-iPatch equipment to be installed
- Create BOM for iPatch equipment
- ROM Estimate for iPatch equipment

4.8 iPatch Server Requirements

- Recommend hardware configuration for iPatch server PC
- Recommend software configuration for iPatch server PC
  - Note: Windows SNMP Service is allowed to run on a server with iPatch SM software
  - Note: Windows SNMP Trap service is allowed to run on a server with iPatch SM software provided that "Use Windows Trap Service" key is added to the registry on iPatch server machine:

    "Use Windows Trap Service" is a DWORD

    HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\iPatch SNMPServer\ Parameters\ Use Windows Trap Service = 1

4.9 iPatch Client(s) Requirements

- Recommend hardware configuration for iPatch client PCs (minimum configuration requirements are provided in System Manager Getting Started Guide which is included as a pdf file with iPatch System Manager software)
- Recommend software configuration for iPatch client PCs minimum configuration requirements are provided in System Manager Getting Started Guide which is included as a pdf file with iPatch System Manager software)

4.10 iPatch Database PC (in case if database has to reside on a separate computer)

- Recommend hardware configuration for iPatch database pc
- Recommend software configuration for iPatch database pc
  - Determine if iPatch database pc would run iPatch installed SQL engine or a full version of SQL software that would have to be supplied by a customer
  - It is recommended that if a full version of SQL is deployed then customer would have to setup proper database backup replication process

4.11 System/Acceptance Test Plan

- Develop System Test Plan to validate that system meets design requirements
  - System is capable to continuously monitor iPatch equipment
  - System is capable to continuously monitor Manager Network Equipment

    - Verify that iPatch software correctly reflects changes to switch port status based on SNMP traps
  - System is capable to detect any changes in real time to physical connectivity of a network

    - Define several iPatch and SNMP based events, and determine system's responsiveness when these events take place
  - System is capable to detect additions or removals of IP devices from a network
  - If remote access is required, establish test criteria for acceptable remote client performance
  - If a project involves remote sites establish test criteria for system performance when managing remote sites
  - Define system conditioning/stabilization period as well as duration of each test
  - Define test sample size for each experiment
- Identify critical tasks that customer requires for iPatch System to perform
  - Service Provisioning
- Verify that iPatch Service Provisioning feature will accurately create required circuit route
- Verify the iPatch Service Provisioning feature will accurately create required circuit route when accessed from iPatch web client
  - Tracing

- Verify that iPatch System is accurately displaying end-to-end circuit information when accessed either from iPatch software or from iPatch equipment
  - o Device Discovery
- Verify that iPatch software accurately discovers configuration of managed network equipment (switches)
- Verify that iPatch software accurately discovers IP devices that connected to a network
- Verify that iPatch software accurately identifies discovered device types based on predefined MAC ID range
- Verify that iPatch software detects changes to managed network equipment configuration
- Verify that iPatch software generates events based on SNMP messages from managed/ monitored devices
- Verify that iPatch software correctly discovers and updates VLAN assignment to switch ports
- Verify that if Deploy Server feature is used, iPatch software is able to correctly provision services to server ports
  - o Event Notification
- Define several Notification profiles for testing. Profiles should be base different events, and recipient groups
- Verify that iPatch Event Notification feature correctly sends email alerts when triggered by iPatch System events
  - o Reports
- Define and generate key reports required by a customer
- Generate reports that document installed iPatch system (the list below shown as an example, any additional relevant reports should be generated based on the specifics of a project)
- Panel to faceplate cabling
- Panel to panel cabling
- Location of Network Equipment
- Connections in Rooms
- Rack capacity
- Devices for Managed Network Equipment
  - o Web Client
- Verify that iPatch System provides user access via iPatch web client
- In co-ordination with a customer determine that maximum number of concurrent iPatch web client sessions that could be supported by customer's network
  - o Define pass/fail criteria for each system/acceptance test
  - o Define the tests that customer would like to do beyond the scope of the System/Acceptance testing. Negotiate any additional costs that may be associated with running these tests.
    - Note: for example additional tests may include performance testing of a system with iPatch database which is co-located with iPatch System Manager software on the same server vs. iPatch database residing on a separate server machine

4.12 Software Integration Design

- If software integration is required
  - Work with customer and Systems Integrator to define desired feature set for integration
  - Request that Systems Integrator would develop and provide to a customer **Software Integration Design Document**
  - Request that Systems Integrator would develop and provide to a customer **Acceptance/ System Test Plan** for the Integrated Solution
  - Request that Systems Integrator would generate and provide to a customer **Integration Project Plan** for developing and implementing required integration.
  - Co-ordinate with Systems Integrator so that implementation schedule for integrated solution would be consistent with overall project schedule
  - Request that Systems Integrator would conduct the **Acceptance/System Test Plan** for the integrated solution and would generate a Test Report that documents all observations and results
  - Request that Systems Integrator would develop and provide to a customer **Release Notes** for the integration work
  - Request for Rough Order of Magnitude estimate for software Integration

4.13 System Design Document

- Summarize collected information from 4.2 to 4.12 in a System Design Document
- Define Handover process
- Update Project Plan
  - Clearly define what information has to be provided by a customer.
  - Identify people responsible for providing that information
  - Specify time when this information should be made available for successful project completion

4.14 Design Phase Deliverables/Sign off Documents

1. System Design Document
2. BOM and estimated materials lead-times
3. Project Plan
4. Integration and iPatch materials preliminary BOM Estimate
5. Updated Project Schedule

5 Procurement phase

Description:

This phase ensures that all needed items and resources are purchased/ordered/booked in a timely fashion so not to endanger time-lines and deliverables defined in the **Project Plan**.

5.1 Procurement Phase Inputs

1. SOW
2. Project Plan
3. System Design Document
4. BOM
5. Installer/Integrator bidder list

5.2 Procurement

- Develop and deploy iPatch Project RFQ including SOW
- RFQ reviews and award decisions made.
- Purchase order development
- Order iPatch Equipment
- Order iPatch Software
- **Note**: Ensure to get the latest version of iPatch software available at a time of deployment by verifying software release information with iPatch Technical Support
- Order iPatch server computer(s)
- Order iPatch client computers
- Order iPatch database pc (in case if database has to reside on a separate pc)
- Place order with software integration vendor

5.3 Procurement Phase Deliverables

1. Procurement Documentation
2. Accurate lead times for Project Schedule update

6 Deployment Phase

Description:

The **Deployment Phase** is split into 3 sections:

1. The hardware installation section
2. The software installation section
3. The system/acceptance test section

The **Deployment Phase** is the most important since it defines how to deploy and implement the system according to the guidelines set forth in the **System Design Document** and tracked according to Project Plan, with a purpose to fulfill Project Scope and the Statement of Work.

Another part of deployment phase is **System/Acceptance Test** that requires that system is tested under realistic environmental conditions to verify that implementation is stable and is fully functional. Any problems and bugs that are discovered during system testing should be resolved and documented including problem description and its fixes. The duration of the stabilizing period should be agreed upon and be part of **System Design Document**.

Deployment Phase Inputs

1. Project Plan
2. System Design Document including System/Acceptance Test Plan

6.1 HW Installation, Setup and Patching

6.1.1 iPatch Hardware Mounting and Initial Test

- Attach panel bus
- Mount iPatch Equipment
- Ensure that Network Manager module is mounted and connected to a Panel Manager in the first rack in iPatch daisy chain
- Connect iPatch Equipment to panel bus
- Power up Rack Manager/Panel Manager on every rack
- Follow instructions for Programming order of panels on each rack
- Verify that every row on each panel has been acknowledged by Rack Manager/Panel Manager
- Verify that Rack Manager/Panel Manager display does not show any "Alarms"/"Confirm" messages
- Disconnect power from Rack Manager/Panel Manager
    - **Note**: During this task, check and follow procedure prescribed in Site-Specific Installation Guidelines to collect serial numbers from iPatch equipment
    - **Note**: During this task, check if Site-Specific Installation Guidelines require to electronically pre-populate iPatch equipment into iPatch database prior to LAN deployment.
    - Procedure for synchronizing iPatch Equipment prior to deployment of network connectivity between iPatch equipment and iPatch database
        - Configure Rack Manager/Panel Manager with Network Manager by enabling "Ethernet" option from Rack Manager/Panel Manager on screen menu
        - Program an arbitrary IP address into Network Manager (for example: 192.168.0.1)
        - Connect via a daisy chain all Rack Manager/Panel Manager in a given row of racks using standard RJ-45 patch cords by starting with Rack Manager OUT port on Rack Manager/Panel Manager in rack 1.
        - Program laptop that is going to be used for this task with an IP address that corresponds to network settings in Network Manager (for example 192.168.0.100)

- Prior to synchronization ensure that iPatch System Manager software is installed on a laptop and start creation of iPatch database adding required site, building, floor, room, rack information in iPatch database
- Add Network Manager object with corresponding IP address (e.g. 192.168.0.1) onto a rack in iPatch database
- Connect laptop with iPatch database using cross-over RJ45 patch cord into Ethernet port on Network Manager module
  - Synchronize NM object in a database with Network Manager equipment
  - Verify that all iPatch equipment is discovered and populated into iPatch database
  - Repeat the same sync procedure for each RM LAN

6.1.2 Cable Installation

- Punch down the cables on the back of the panels per predefined schedule documented in System Design Document
- Test and verify that all cabling was done accurately per predefined schedule.
- Update cabling schedule in case if discrepancies are found during the test
- Upon completion of cable installation, enable power to each Rack Manager/Panel Manager to verify that all iPatch equipment functions properly and that there are no "Alarms" or "Confirm" appears on Rack Manager/Panel Manager screen

6.1.3 iPatch Hardware Setup

- Prior to deployment of network connectivity between iPatch equipment and iPatch database
  - Configure Rack Manager/Panel Manager with Network Manager by enabling "Ethernet" option from Rack Manager/Panel Manager on screen menu, in case this has not been done during step 6.1.2
  - Program pre-defined IP address into Network Manager module
  - Connect via a daisy chain all Rack Managers/Panel Managers in a given row of racks using standard RJ-45 patch cords by starting with Rack MGR OUT port on the first rack, in case this has not been done during step 6.1.2
- After deployment of network connectivity between iPatch equipment and iPatch database
  - Connect Ethernet port on Network Manager module to a designated port on a switch using standard RJ-45 patch cord. It is recommended to enable Network Manager's Ping feature during the initial setup to help with verification of network connectivity between Network Manager and iPatch server. Once the test is completed, it is recommended to turn that feature off.
  - Use synchronize feature to establish communication between iPatch database and iPatch equipment. **Note:** if synchronization fails, check details in the events window in iPatch system manager whether a failure was due to iPatch equipment mismatch. If there is a mismatch between iPatch equipment in a database and actual installed equipment on a rack, either use clear and override feature to resolve the mismatch or manually adjust number of panels in a database and then repeat Synchronization.

6.1.4 Patching

- Cross-connect patching using paper based schedule without network connection between iPatch equipment and iPatch database
  - Ensure that all iPatch Rack Manager/Panel Manager are powered up
  - Follow paper based patching schedule by applying one patch connection at a time within each Rack Manager/Panel Manager LAN/Row of racks/Telecomm room
  - In case if any changes were made to patching schedule, reflect these changes in patching schedule document and append the updated document to System Design Document
- Cross-connect patching using paper based schedule with network connection between iPatch equipment and iPatch database
  - Ensure that all iPatch Rack Manager/Panel Manager are powered up
  - Follow paper based patching schedule by applying one patch connection at a time within each RM LAN/Row of racks/Telecomm room
  - If patch connections are constrained to within each rack/cabinet, it is recommended to set patching mode for those Rack Manager/Panel Manager to "Local". This feature would allow application of patches to be done simultaneously by multiple technicians within the same RM LAN
  - In case if any changes were made to patching schedule, reflect these changes in patching schedule document and append the updated document to System Design Document
- Cross-connect patching using iPatch electronic work orders without network connection between iPatch equipment and iPatch database
  - Ensure that all iPatch Rack Manager/Panel Manager are powered up
  - Create all patching assignments in iPatch database
  - Schedule all electronic work orders to be "immediate"
  - Use laptop to feed electronic work orders to each Network Manager
  - Install server version of iPatch software on a laptop
  - Use Backup Restore utility to transfer iPatch database into a laptop
  - Connect laptop to Network Manager using cross-over RJ-45 patch cord
  - Establish communication between iPatch database on a laptop and Network Manager
  - Follow work order instructions as they appear one at a time on the display screen of Rack Manager/Panel Manager.
- Cross-connect patching using iPatch electronic work orders with network connection between iPatch equipment and iPatch database
  - Ensure that all iPatch Rack Manager/Panel Manager are powered up
  - Create all patching assignments in iPatch database
  - Schedule all electronic work orders to be "immediate"
  - Follow work order instructions as they appear one at a time on the display screen of Rack Manager/Panel Manager
- Interconnect patching using paper based schedule without network connectivity between iPatch equipment and iPatch database
  - Ensure that all iPatch Rack Manager/Panel Manager are powered up
  - Follow paper based patching schedule by applying one patch connection at a time within each RM LAN/Row of racks/Telecomm room
  - In case if any changes were made to patching schedule, reflect these changes in patching schedule document and append the updated document to System Design Document

- Interconnect patching using paper based schedule with network connection between iPatch equipment and iPatch database
  - Ensure that all iPatch Rack Manager/Panel Manager are powered up
  - Set patching mode for every Rack Manager/Panel Manager to "Equipment". This feature would allow applications of patches to be done simultaneously by multiple technicians within the same RM LAN and in any order
  - In case if any changes were made to patching schedule, reflect these changes in patching schedule document and append the updated document to System Design Document
- Interconnect patching using iPatch electronic work orders with of network connectivity between iPatch equipment and iPatch database
  - Ensure that all iPatch Rack Manager/Panel Managers are powered up
  - Create all patching assignments in iPatch database
  - Schedule all electronic work orders to be "immediate"
  - Follow work order instructions as they appear one at a time on the display screen of Rack Manager/Panel Manager
  - In case if any changes were made to patching schedule, reflect these changes in patching schedule document and append the updated document to System Design Document
- Verify that upon finishing patching activities iPatch Rack Manager/Panel Manager screens do not show any "Alarms" or "Confirm"

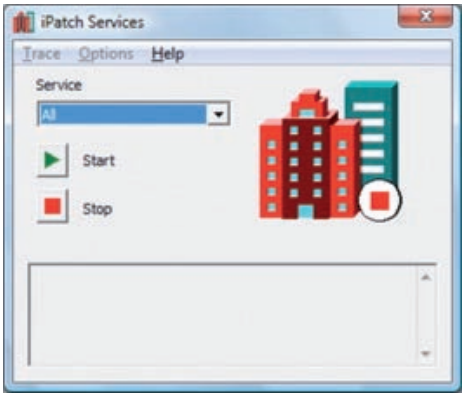
6.1.5HW Install Section Deliverables

1. Updated Project Plan
2. Updated System Design Document

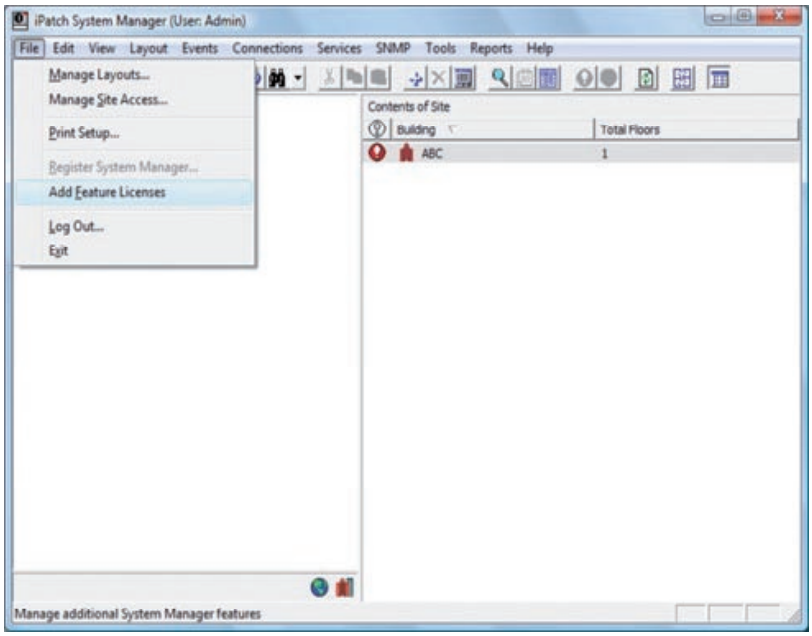
6.2 SW Installation and Database Setup Section

6.2.1 iPatch System Manager Software

- Install iPatch software according to System Design Document and Site Specific Installation Guidelines
- Register iPatch software using "register on-line" option
  - **Note:** In case when a laptop is used for preliminary database setup, do not register instance of iPatch server software that would be installed on a laptop
  - **Note:** If at a time of software installation iPatch server pc does not have connection to internet, contact iPatch Technical Support
- Once registered, manually start All iPatch services



- Verify that the following iPatch Services are running :Communications, Event Notification, Messaging, Report, SNMP and Web
- Open System Manager application and using Add Feature Licenses enter and register XML key to enable Integration service



- Once XML key is registered, manually start Integration service
- Start trace logs for Communications, Event Notification, and SNMP services

After network connectivity between iPatch equipment and iPatch database is deployed

- Verify that all iPatch required ports are open(not blocked by firewall) for communication (see Appendix B)

6.2.2 iPatch Database Setup

Prior to deployment of Network connectivity between iPatch equipment and iPatch database

- Create site database on iPatch server according to System Design Document
  - **Note**: If preliminary database built was started on another computer (like for example a laptop in 6.1.2 to "discover" all iPatch equipment), transfer that database to iPatch server using Backup Restore utility
- Create buildings/floors/rooms/faceplate/jacks
- Use pre-defined naming convention to label database objects
- Define new device types if required
- Define MAC address range for various device types if required
- Populate device objects into iPatch database if required
- Create racks
- Create iPatch Equipment
  - **Note**: In case if arbitrary IP addresses were used for iPatch Network Managers during preliminary database built, change IP addresses for NM in database correspond to the dedicated IP addresses that were programmed into Rack Manger/Panel Manager
- Create server objects as prescribed in System Design Document

- Define all cabling associations between panels and jacks
  - **Note:** It is recommended to perform cabling task after patch panels have been physically cabled and tested.
- Create and manually configure network equipment (switch) objects if required
- Arrange equipment that was populated in racks in a database to reflect arrangement of installed equipment
- Define cabling information for manually configured network equipment
- Import floor plans
- Assign floor plans to the corresponding floors and rooms objects in iPatch database
- Populate required database objects onto a floor plan

After deployment of Network connectivity between iPatch equipment and iPatch database

- Use synchronize feature to establish communication between iPatch database and iPatch equipment (this is the same step as described in 6.1.3
  - **Note**: if synchronization fails, check details in the events window in iPatch system manager if a failure was due to iPatch equipment mismatch. If there is a mismatch between iPatch equipment in a database and actual installed equipment on a rack, either use clear and override feature to resolve the mismatch or manually adjust number of panels in a database and then repeat Synchronization.
- After patching is applied document all patch connections between non-iPatch ports as specified in System Design Document
- After patching is applied use Define Equipment Patches feature to document all patch connections between switch ports and iPatch ports as specified in System Design Document
- Create iPatch system users and their corresponding access privileges
- Create Technician Groups
- Configure Event Notification Service if required
  - Select iPatch and SNMP events for monitoring by iPatch System Manager software
  - Create event notification profiles

6.2.3 SNMP Device Discovery Setup

Prior to deployment of Network connectivity between iPatch equipment and iPatch database

- Contact a customer to collect MIB walk files per agreement outlined in System Design Document
  - **Note**: It is recommended to get MIB walk files as soon as switches have been configured
- Provide MIB walk files to iPatch Technical Support via InSite web portal to validate compatibility of iPatch software with deployed switches
  - **Note**: If iPatch software is found to be incompatible with some of the switches, iPatch Technical Support would provide an estimate to develop support for those switches
- Contact a customer to verify that switches and routers are configured per System Design Document
- Contact a customer to collect IP address/SNMP Community String(s)/Corresponding router(or a Layer 3 switch) information
- Create router list in iPatch database as prescribed by the System Design
- Document
- Create managed network equipment (switch) objects in iPatch database as defined in the System Design Document

- Document
    - o Define switch Status Polling Interval
    - o Define Device Discovery method and settings

After deployment of Network connectivity between iPatch equipment and iPatch database

- Use SNMP synchronization feature to "discover" switch configuration and to populate it in iPatch database
- Establish cabling associations between switch ports and panel ports
- Create services list use prescribed naming convention
- Assign services to corresponding switch ports
- Use SNMP Discover Devices feature with every switch to discover and -populate devices into iPatch database

6.3 System/Acceptance Test

- Perform System/Acceptance Test Plan
- Generate System/Acceptance Test Report that describes all results, observations and performance information about installed system
- Clearly identify whether each of the pre-defined acceptance criterions passed or failed

6.4 Deployment Phase Deliverables

1. Updated Project Plan
2. Updated System Design Document
3. System/Acceptance Test Report

7 Integration Deployment Phase

Description:

Any integration with the existing/third party software application should be introduced after the installed system has been tested and stabilized. The integration phase would also involve its own conditioning period, system test and corresponding test report.

7.1 Integration Phase Inputs

1. Integration Design Document
2. Integration Acceptance/System Test Plan
3. Integration Project Plan
4. Release Notes for the add-on integration software

7.2 Installation

- Perform necessary steps to install add-on Integration software

7.3 Integration/Acceptance Test

- Perform Integration Acceptance/System Test for Integrated Solution
- Generate Integration Test Report that describes all results, observations and performance information about installed system

7.4 Integration Phase Deliverables

1. Updated Integration Design Document
2. Updated Integration Project Plan
3. Integration Acceptance/System Test Report for Integrated Solution
4. Release Notes for Integrated Solution

8 Closeout Phase

Description:

This is a final phase of the system implementation. During this phase a customer accepts the installed system, gets trained on how to use the system, all relevant information that documents the installed system is transferred to a customer and all necessary warranty certificates and services agreements are issued.

8.1 Closeout Inputs

1. SOW
2. Updated Project Plan
3. Updated System Design Document
4. BOM
5. Procurement Documentation
6. System/Acceptance Test Report
7. System/Acceptance Test Report for Integrated Solution (if applicable)
8. Release notes for Integrated Solution (if applicable)
9. Deliver updated final budget docs as applicable

8.2 Customer Acceptance

- Conduct any required project acceptance testing, if any acceptance testing is specified by SOW
- Customer should provide a letter acknowledging that iPatch System as installed meets requirements outlined in System Design Document
- Customer signs project acceptance documents

8.3 Customer Training

- Provide/arrange required iPatch training for a customer based on SOW agreement

8.4 Registration

8.4.1 iPatch Hardware Registration

- Provide a list with serial numbers for every iPatch installed equipment. The list should include a date when the serial numbers were collected, as well as a hand over date.

8.4.2 iPatch Software Registration

- Provide a customer with iPatch software on a CD that was purchased during procurement phase. The CD should have installation key code.
  - Note: If a software version that was installed on iPatch server is different from purchased version, provide another CD (need to get SYSTIMAX approval first) that contains a copy of iPatch software that was installed.
- If any software integration was developed for a project, a customer should receive a CD copy with that software
- Note: It is critical that the customer or integrator complete the registration process immediately so the customer is notified of any updates or enhancements for the 1st year and is given access to CommScope's InSite support website. Once registered the customer will be notified in advance of the Software Assurance expiration date well in advance and they will have time to extend their Software Assurance for another year.

8.4.3 SYSTIMAX Site Certification

- Follow the existing SYSTIMAX site certification process to obtain SYSTIMAX 20-year Extended Product Warranty and Application Assurance

8.5 Customer Sign-off

- A customer should sign-off on SOW document as means of accepting the iPatch installation

8.6 Closeout Phase Deliverables

1. Signed SOW
2. System Design Document
3. BOM
4. Procurement Documentation
5. SYSTIMAX site certification/SYSTIMAX Warranty
6. iPatch Extended Warranty is applicable
7. Customer acknowledgment letter
8. Project acceptance documents signed
9. System/Acceptance Test Report(s)
10. Software CD (iPatch System Manager Software and Integration Software if applicable)

APPENDIX A

Form: iPatch Project Scope

To be completed and attached to RFQ document

Project type:

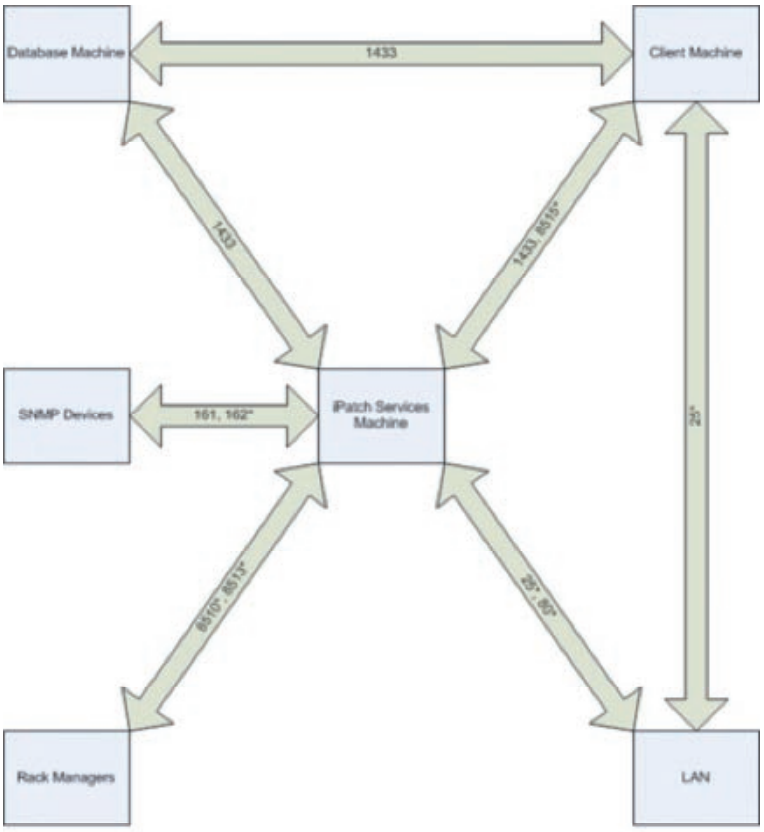
- ❑ Office
- ❑ Data Center
- ❑ Campus

Number of sites:		
Number of buildings:		
Patch panels:		
Number of installed copper iPatch panel ports		
Number of installed fiber iPatch panel ports		
Number of installed non-iPatch panel ports		
Number of installed work area outlets		
Network Switches		
Number of different managed switch models (List with model numbers & configurations will be provided prior to project start date)		
Number of installed managed switches		
Average number of ports/managed switch		
Number of installed unmanaged switches		
Average number of ports/unmanaged switch		
Servers:		
Number of installed servers		
Average number of servers per rack		
Average number of ports per server		
Number of Telecom Rooms/average number of racks per TR		
Number of Rows of Racks/Cabinets in the Data Center		
Number of networked devices to be discovered		
Cabling Topology: ❑ Interconnect ❑ Cross-connect		
Integration with Floor Plan/Campus drawings:	❑ Yes	❑ No
Documentation of Outside Plant cabling:	❑ Yes	❑ No
Intelligent Service Provisioning	❑ Yes	❑ No
Event Notification	❑ Yes	❑ No
Integration into IT work flow process:	❑ Yes	❑ No
(Required integration scope is attached)	❑ Yes	❑ No
Integration with External Application: Name of External Application: (Required integration scope is attached)		
Provide end-user training:	❑ Yes	❑ Yes

APPENDIX B

APPENDIX B

iPatch communication ports



25*: Event Notification Server
80*: Web Server
161: SNMP Inbound Traffic
162*: SNMP Outbound Traffic
1433: SQL Server
8510*: Rack Manager Communication
8513*: Rack Manager Communication

* Designates values that are registry driven

APPENDIX C

iPatch System Manager Authentication Options

Authentication refers to the process of verifying a username with its password during the login process (either login to SQL Server or login to iPatch System Manager).

There are two authentication modes:

SQL authentication: uses login name and password created and stored in SQL Server. To login to SQL server with SQL authentication, a loginname is required which has already been created in SQL server. The default login for administrator is 'sa'. When using this method of authentication, a login and password needs to be created in SQL server for every user who will login to the SQL server. An administrator on SQL Server needs to manage all of the user-ids and passwords (i.e. resetting passwords, password ageing, etc).

Windows NT Authentication: the user's Windows loginname is used, and SQL Server use Windows operating system to validate the user's password. This is an encrypted, secure method of authentication – and most enterprise organisations will be using this authentication mode. With this method of authentication, it is not necessary to re-create each user-id and password in SQL server. When a login is made to SQL Server, then the password is validated with Windows (Active Directory). So SQL Server doesn't maintain a local copy of either, the User-id or the password. Management of user-id and passwords is handled centrally (with Windows Active Directory).

SQL Server supports two different authentication modes:
SQL Authentication (default)
Windows Authentication

System Manager also supports two different authentication modes:
Mixed-Mode Authentication (default):
Windows NT Authentication

Installing System Manager (default)

A default installation of System Manager (with bundled SQL Express) will install SQL Server with SQL (Mixed-Mode) Authentication, and System Manager with Mixed-Mode Authentication.

Installing System Manager with Mixed-Mode (default)

- if SQL Server has already been installed (Mixed-Mode)

If there is an existing SQL Server already installed, and the SQL Server has been installed using Mixed-Mode authentication, then when System Manager is installed, the installation process will detect the presence of SQL Server.

During installation, the user will be prompted for the password for 'sa'. This password is required in order to complete the System Manager installation. With the 'sa' login, the installation program creates 'PatchManUser' login-id.

This 'PatchManUser' login-id is then used for the rest of the installation (i.e. to build the databases, create tables, etc.)

Installing System Manager with Windows Authentication

- if SQL Server already installed with Windows Authentication

If there is an existing SQL Server already installed, and the SQL Server is using Windows Authentication, then when System Manager is installed, the installation process will detect the presence of SQL Server.

During the installation, the installation program uses the current windows login-id to build the databases, create the tables, etc.

NB: The Windows login-id used for this installation must have 'Admin' rights, and needs to have sufficient permissions to create databases, build database tables, create windows services, etc.

To change authentication mode in SQL server

1. Stop the instance
2. Use 'Regedit' to modify registry key (default instance)
3. HKLM\Software\Microsoft\Microsoft SQL Server\MSSQL.1\MSSQLServer\LoginMode (2 = Mixed Mode, 1 = Windows Authentication)
4. Start the instance

To change authentication mode in System Manager

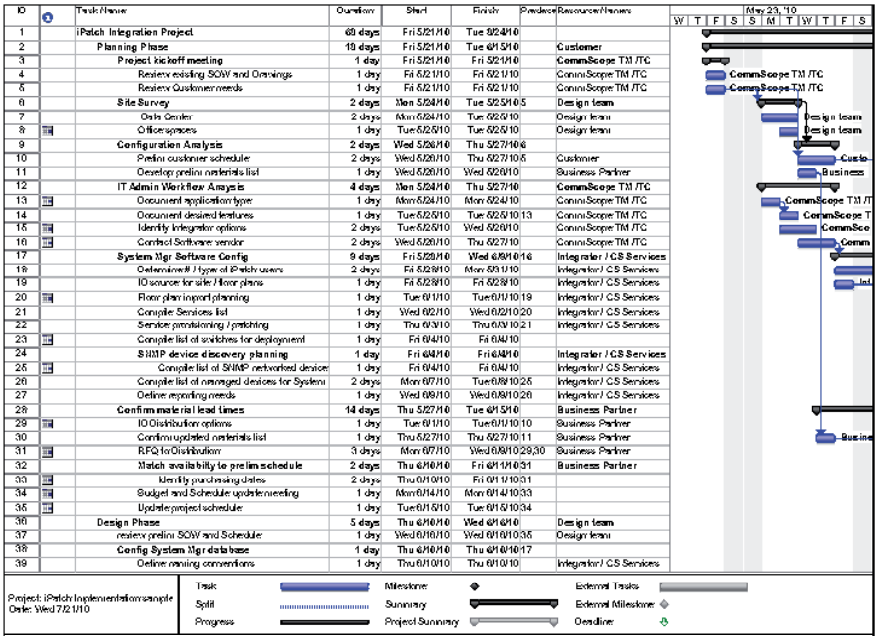
1. Uninstall System Manager (using Control Panel -> Add/Remove Programs)
2. Reinstall System Manager
   - select required authentication mode (mixed-mode or Windows) during the installation process

APPENDIX D

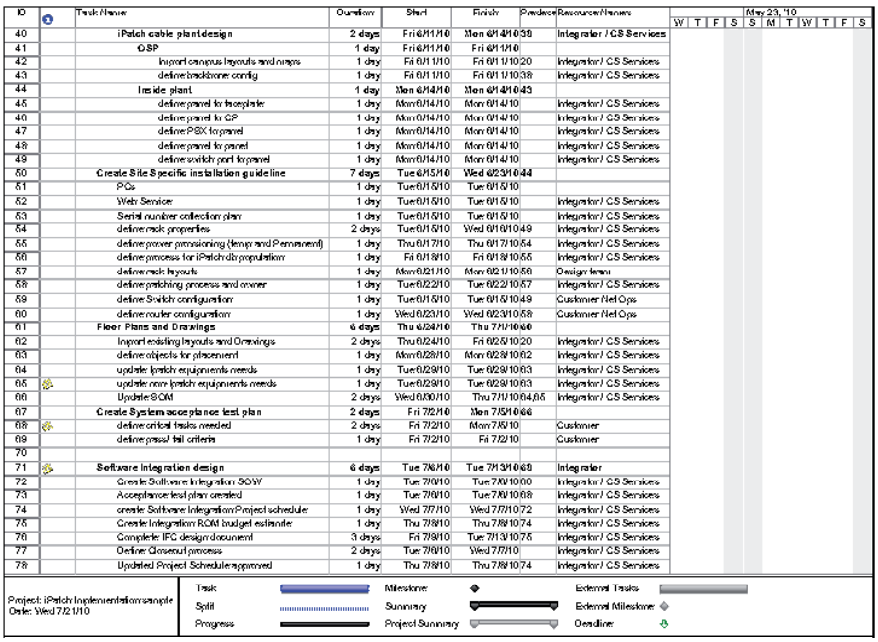
Sample Project Plan

Below is an example of iPatch implementation project plan that includes all of the tasks that are included in the Implementation Methodology document. A copy of the MS Project file with this project plan is available from mycommscope.com site.

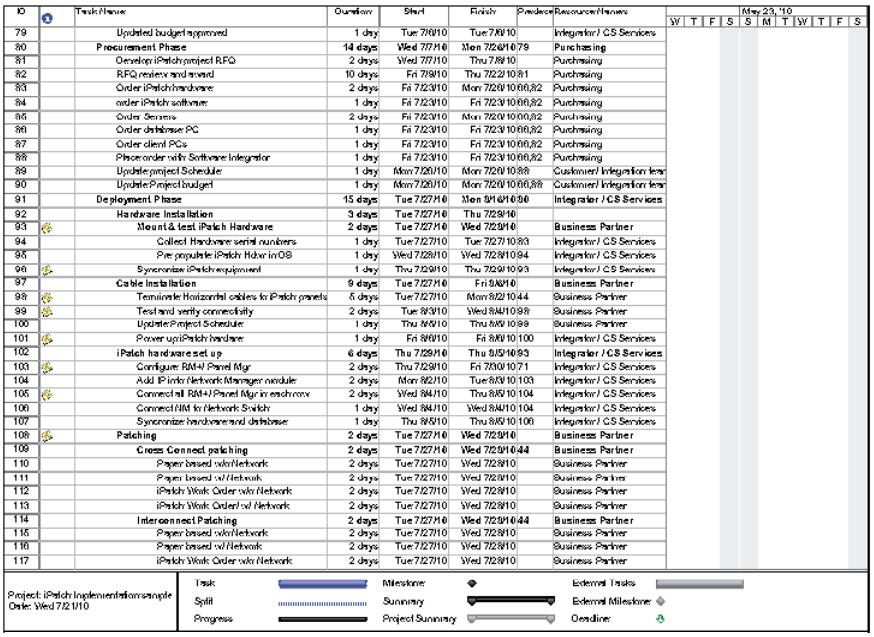
It is understood that each project will have different set of tasks based on specific SOW and customer requirements, however we think that by using a Sample Project plan as a starting point would help in creating your next project plan.



ID	Task Name	Duration	Start	Finish	Predecessors	Resource Names
1	iPatch Integration Project	65 days	Fri 5/21/10	Tue 8/24/10		
2	Planning Phase	19 days	Fri 5/21/10	Tue 6/15/10		Customer
3	Project kickoff meeting	1 day	Fri 5/21/10	Fri 5/21/10		CommScope TM /TC
4	Review existing SOW and Drawings	1 day	Fri 5/21/10	Fri 5/21/10		CommScope TM /TC
5	Review Customer needs	1 day	Fri 5/21/10	Fri 5/21/10		CommScope TM /TC
6	Site Survey	2 days	Mon 5/24/10	Tue 5/25/10	5	Design team
7	Data Center	2 days	Mon 5/24/10	Tue 5/25/10		Design team
8	Office spaces	1 day	Tue 5/25/10	Tue 5/25/10		Design team
9	Configuration Analysis	2 days	Wed 5/26/10	Thu 5/27/10	6	
10	Prelim customer schedule	2 days	Wed 5/26/10	Thu 5/27/10	6	Customer
11	Develop prelim materials list	1 day	Wed 5/26/10	Wed 5/26/10		Business Partner
12	IT Admin Workflow Analysis	4 days	Mon 5/24/10	Thu 5/27/10		CommScope TM /TC
13	Document application types	1 day	Mon 5/24/10	Mon 5/24/10		CommScope TM /TC
14	Document desired features	1 day	Tue 5/25/10	Tue 5/25/10	13	CommScope TM /TC
15	Identify integrator options	2 days	Tue 5/25/10	Wed 5/26/10		CommScope TM /TC
16	Contact Software vendor	2 days	Wed 5/26/10	Thu 5/27/10		CommScope TM /TC
17	System Mgr Software Config	9 days	Fri 5/28/10	Wed 6/9/10	16	Integrator / CS Services
18	Determine # / type of iPatch users	2 days	Fri 5/28/10	Mon 5/31/10		Integrator / CS Services
19	IO sources for site / floor plans	1 day	Fri 5/28/10	Fri 5/28/10		Integrator / CS Services
20	Floor plan import planning	1 day	Tue 6/1/10	Tue 6/1/10	19	Integrator / CS Services
21	Compile Services list	1 day	Wed 6/2/10	Wed 6/2/10	20	Integrator / CS Services
22	Service provisioning / patching	1 day	Thu 6/3/10	Thu 6/3/10	21	Integrator / CS Services
23	Compile list of switches for deployment	1 day	Fri 6/4/10	Fri 6/4/10		
24	SNMP device discovery planning	1 day	Fri 6/4/10	Fri 6/4/10		Integrator / CS Services
25	Compile list of SNMP networked devices	1 day	Fri 6/4/10	Fri 6/4/10		Integrator / CS Services
26	Compile list of managed devices for System	2 days	Mon 6/7/10	Tue 6/8/10	25	Integrator / CS Services
27	Define reporting needs	1 day	Wed 6/9/10	Wed 6/9/10	26	Integrator / CS Services
28	Confirm material lead times	14 days	Thu 5/27/10	Tue 6/15/10		Business Partner
29	IO Distribution options	1 day	Tue 6/1/10	Tue 6/1/10	10	Business Partner
30	Confirm updated materials list	1 day	Thu 5/27/10	Thu 5/27/10	11	Business Partner
31	RFQ for Distribution	3 days	Mon 6/7/10	Wed 6/9/10	29,30	Business Partner
32	Match availability to prelim schedule	2 days	Thu 6/10/10	Fri 6/11/10	31	Business Partner
33	Identify purchasing dates	2 days	Thu 6/10/10	Fri 6/11/10	31	
34	Budget and Scheduler update meeting	1 day	Mon 6/14/10	Mon 6/14/10	33	
35	Update project schedules	1 day	Tue 6/15/10	Tue 6/15/10	34	
36	Design Phase	5 days	Thu 6/10/10	Wed 6/16/10		Design team
37	review prelim SOW and Schedule	1 day	Wed 6/16/10	Wed 6/16/10	35	Design team
38	Config System Mgr database	1 day	Thu 6/10/10	Thu 6/10/10	17	
39	Define naming conventions	1 day	Thu 6/10/10	Thu 6/10/10		Integrator / CS Services



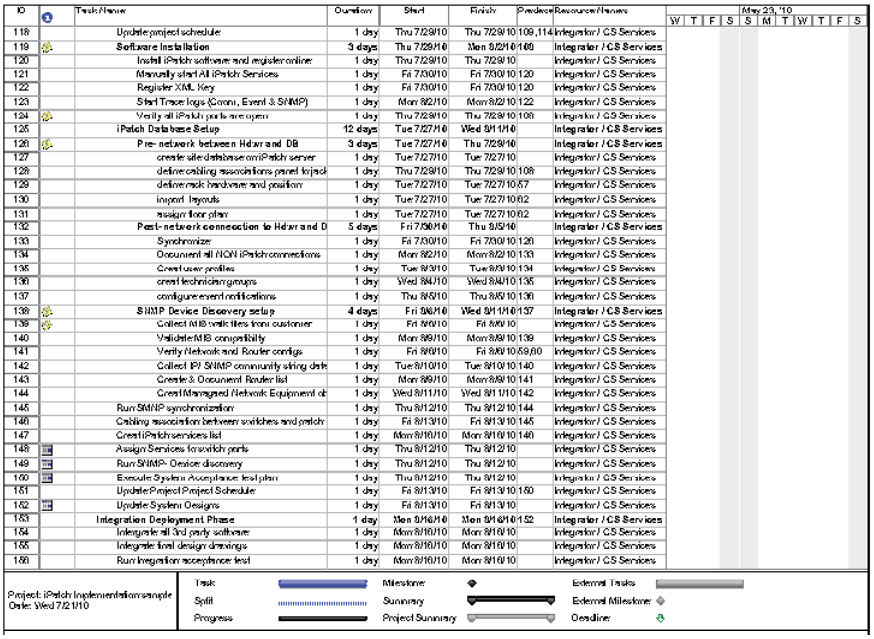
ID	Task Name	Duration	Start	Finish	Predecessors	Resource Names
40	iPatch cable plant design	2 days	Fri 6/11/10	Mon 6/14/10	39	Integrator / CS Services
41	OSP	1 day	Fri 6/11/10	Fri 6/11/10		
42	Import campus layouts and maps	1 day	Fri 6/11/10	Fri 6/11/10	20	Integrator / CS Services
43	define backbone config	1 day	Fri 6/11/10	Fri 6/11/10	38	Integrator / CS Services
44	Inside plant	1 day	Mon 6/14/10	Mon 6/14/10	43	
45	define panel to faceplate	1 day	Mon 6/14/10	Mon 6/14/10		Integrator / CS Services
46	define panel to SP	1 day	Mon 6/14/10	Mon 6/14/10		Integrator / CS Services
47	define PBX to panel	1 day	Mon 6/14/10	Mon 6/14/10		Integrator / CS Services
48	define panel to panel	1 day	Mon 6/14/10	Mon 6/14/10		Integrator / CS Services
49	define switch port to panel	1 day	Mon 6/14/10	Mon 6/14/10		Integrator / CS Services
50	Create Site Specific installation guideline	7 days	Tue 6/15/10	Wed 6/23/10	44	
51	POs	1 day	Tue 6/15/10	Tue 6/15/10		
52	Web Services	1 day	Tue 6/15/10	Tue 6/15/10		Integrator / CS Services
53	Serial number collection plan	1 day	Tue 6/15/10	Tue 6/15/10		Integrator / CS Services
54	define rack properties	2 days	Tue 6/15/10	Wed 6/16/10	49	Integrator / CS Services
55	define power provisioning (temp and Permanent)	1 day	Thu 6/17/10	Thu 6/17/10	54	Integrator / CS Services
56	define process for iPatch db population	1 day	Fri 6/18/10	Fri 6/18/10	55	Integrator / CS Services
57	define rack layouts	1 day	Mon 6/21/10	Mon 6/21/10	56	Design team
58	define patching process and owner	1 day	Tue 6/22/10	Tue 6/22/10	57	Integrator / CS Services
59	define Switch configuration	1 day	Tue 6/15/10	Tue 6/15/10	49	Customer Net Ops
60	define router configuration	1 day	Wed 6/23/10	Wed 6/23/10	58	Customer Net Ops
61	Floor Plans and Drawings	6 days	Thu 6/24/10	Thu 7/1/10	60	
62	Import existing layouts and Drawings	2 days	Thu 6/24/10	Fri 6/25/10	20	Integrator / CS Services
63	define objects for placement	1 day	Mon 6/28/10	Mon 6/28/10	62	Integrator / CS Services
64	update ipatch equipments needs	1 day	Tue 6/29/10	Tue 6/29/10	63	Integrator / CS Services
65	update non-ipatch equipments needs	1 day	Tue 6/29/10	Tue 6/29/10	63	Integrator / CS Services
66	Update BOM	2 days	Wed 6/30/10	Thu 7/1/10	64,65	Integrator / CS Services
67	Create System acceptance test plan	2 days	Fri 7/2/10	Mon 7/5/10	66	
68	define critical tasks needed	2 days	Fri 7/2/10	Mon 7/5/10		Customer
69	define pass/ fail criteria	1 day	Fri 7/2/10	Fri 7/2/10		Customer
70						
71	Software Integration design	6 days	Tue 7/6/10	Tue 7/13/10	69	Integrator
72	Create Software Integration SOW	1 day	Tue 7/6/10	Tue 7/6/10	60	Integrator / CS Services
73	Acceptance test plan created	1 day	Tue 7/6/10	Tue 7/6/10	68	Integrator / CS Services
74	create Software Integration Project schedule	1 day	Wed 7/7/10	Wed 7/7/10	72	Integrator / CS Services
75	Create Integration ROM budget estimate	1 day	Thu 7/8/10	Thu 7/8/10	74	Integrator / CS Services
76	Complete IFC design document	3 days	Fri 7/9/10	Tue 7/13/10	75	Integrator / CS Services
77	Define Closeout process	2 days	Tue 7/6/10	Wed 7/7/10		Integrator / CS Services
78	Updated Project Scheduler approved	1 day	Thu 7/8/10	Thu 7/8/10	74	Integrator / CS Services



ID	Task Name	Duration	Start	Finish	Predecessors	Resource Names
79	Updated budget approved	1 day	Tue 7/6/10	Tue 7/6/10		Integrator / CS Services
80	**Procurement Phase**	**14 days**	**Wed 7/7/10**	**Mon 7/26/10**	**79**	**Purchasing**
81	Develop iPatch project RFQ	2 days	Wed 7/7/10	Thu 7/8/10		Purchasing
82	RFQ review and award	10 days	Fri 7/9/10	Thu 7/22/10	81	Purchasing
83	Order iPatch hardware	2 days	Fri 7/23/10	Mon 7/26/10	66,82	Purchasing
84	order iPatch software	1 day	Fri 7/23/10	Fri 7/23/10	66,82	Purchasing
85	Order Servers	2 days	Fri 7/23/10	Mon 7/26/10	66,82	Purchasing
86	Order database PC	1 day	Fri 7/23/10	Fri 7/23/10	66,82	Purchasing
87	Order client PCs	1 day	Fri 7/23/10	Fri 7/23/10	66,82	Purchasing
88	Place order with Software Integrator	1 day	Fri 7/23/10	Fri 7/23/10	66,82	Purchasing
89	Update project Schedule	1 day	Mon 7/26/10	Mon 7/26/10	88	Customer/ Integration Team
90	Update Project budget	1 day	Mon 7/26/10	Mon 7/26/10	66,88	Customer/ Integration Team
91	**Deployment Phase**	**15 days**	**Tue 7/27/10**	**Mon 8/16/10**	**90**	**Integrator / CS Services**
92	Hardware Installation	3 days	Tue 7/27/10	Thu 7/29/10		
93	Mount & test iPatch Hardware	2 days	Tue 7/27/10	Wed 7/28/10		Business Partner
94	Collect Hardware serial numbers	1 day	Tue 7/27/10	Tue 7/27/10	93	Integrator / CS Services
95	Pre-populate iPatch Hdwr in OS	1 day	Wed 7/28/10	Wed 7/28/10	94	Integrator / CS Services
96	Synconize iPatch equipment	1 day	Thu 7/29/10	Thu 7/29/10	93	Integrator / CS Services
97	Cable Installation	9 days	Tue 7/27/10	Fri 8/6/10		Business Partner
98	Terminate Horizontal cables to iPatch panels	5 days	Tue 7/27/10	Mon 8/2/10	44	Business Partner
99	Test and verify connectivity	2 days	Tue 8/3/10	Wed 8/4/10	98	Business Partner
100	Update Project Schedule	1 day	Thu 8/5/10	Thu 8/5/10	99	Business Partner
101	Power up iPatch hardware	1 day	Fri 8/6/10	Fri 8/6/10	100	Integrator / CS Services
102	iPatch hardware set up	6 days	Thu 7/29/10	Thu 8/5/10	93	Integrator / CS Services
103	Configure RM-I Panel Mgr	2 days	Thu 7/29/10	Fri 7/30/10	71	Integrator / CS Services
104	Add IP info Network Manager module	2 days	Mon 8/2/10	Tue 8/3/10	103	Integrator / CS Services
105	Connect all RM-I Panel Mgr in each row	2 days	Wed 8/4/10	Thu 8/5/10	104	Integrator / CS Services
106	Connect NM to Network Switch	1 day	Wed 8/4/10	Wed 8/4/10	104	Integrator / CS Services
107	Synconize hardware and database	1 day	Thu 8/5/10	Thu 8/5/10	106	Integrator / CS Services
108	Patching	2 days	Tue 7/27/10	Wed 7/28/10		Business Partner
109	Cross Connect patching	2 days	Tue 7/27/10	Wed 7/28/10	44	Business Partner
110	Paper based w/o Network	2 days	Tue 7/27/10	Wed 7/28/10		Business Partner
111	Paper based w/ Network	2 days	Tue 7/27/10	Wed 7/28/10		Business Partner
112	iPatch Work Order w/o Network	2 days	Tue 7/27/10	Wed 7/28/10		Business Partner
113	iPatch Work Order w/ Network	2 days	Tue 7/27/10	Wed 7/28/10		Business Partner
114	Interconnect Patching	2 days	Tue 7/27/10	Wed 7/28/10	44	Business Partner
115	Paper based w/o Network	2 days	Tue 7/27/10	Wed 7/28/10		Business Partner
116	Paper based w/ Network	2 days	Tue 7/27/10	Wed 7/28/10		Business Partner
117	iPatch Work Order w/o Network	2 days	Tue 7/27/10	Wed 7/28/10		Business Partner

Project: iPatch Implementation sample
Date: Wed 7/21/10

Task · Split · Progress · Milestone · Summary · Project Summary · External Tasks · External Milestone · Deadline



ID	Task Name	Duration	Start	Finish	Predecessors	Resource Names
118	Update project schedule	1 day	Thu 7/29/10	Thu 7/29/10	109,114	Integrator / CS Services
119	**Software Installation**	**3 days**	**Thu 7/29/10**	**Mon 8/2/10**	**118**	**Integrator / CS Services**
120	Install iPatch software and register online	1 day	Thu 7/29/10	Thu 7/29/10		Integrator / CS Services
121	Manually start All iPatch Services	1 day	Fri 7/30/10	Fri 7/30/10	120	Integrator / CS Services
122	Register XML Key	1 day	Fri 7/30/10	Fri 7/30/10	120	Integrator / CS Services
123	Start Trace logs (Comm, Event & SNMP)	1 day	Mon 8/2/10	Mon 8/2/10	122	Integrator / CS Services
124	Verify all iPatch ports are open	1 day	Thu 7/29/10	Thu 7/29/10	108	Integrator / CS Services
125	**iPatch Database Setup**	**12 days**	**Tue 7/27/10**	**Wed 8/11/10**		**Integrator / CS Services**
126	**Pre- network between Hdwr and DB**	**3 days**	**Tue 7/27/10**	**Thu 7/29/10**		**Integrator / CS Services**
127	create site database on iPatch server	1 day	Tue 7/27/10	Tue 7/27/10		Integrator / CS Services
128	define cabling associations panel to jack	1 day	Thu 7/29/10	Thu 7/29/10	108	Integrator / CS Services
129	define rack hardware and position	1 day	Tue 7/27/10	Tue 7/27/10	57	Integrator / CS Services
130	import layouts	1 day	Tue 7/27/10	Tue 7/27/10	62	Integrator / CS Services
131	assign floor plan	1 day	Tue 7/27/10	Tue 7/27/10	62	Integrator / CS Services
132	**Post- network connection to Hdwr and D**	**5 days**	**Fri 7/30/10**	**Thu 8/5/10**		**Integrator / CS Services**
133	Synchronize	1 day	Fri 7/30/10	Fri 7/30/10	120	Integrator / CS Services
134	Document all NON iPatch connections	1 day	Mon 8/2/10	Mon 8/2/10	133	Integrator / CS Services
135	Creat user profiles	1 day	Tue 8/3/10	Tue 8/3/10	134	Integrator / CS Services
136	creat technician groups	1 day	Wed 8/4/10	Wed 8/4/10	135	Integrator / CS Services
137	configure event notifications	1 day	Thu 8/5/10	Thu 8/5/10	136	Integrator / CS Services
138	**SNMP Device Discovery setup**	**4 days**	**Fri 8/6/10**	**Wed 8/11/10**	**137**	**Integrator / CS Services**
139	Collect MIB restrictions from customer	1 day	Fri 8/6/10	Fri 8/6/10		Integrator / CS Services
140	Validate MIB compatibility	1 day	Mon 8/9/10	Mon 8/9/10	139	Integrator / CS Services
141	Verify Network and Router configs	1 day	Fri 8/6/10	Fri 8/6/10	69,00	Integrator / CS Services
142	Collect IP/ SNMP community string data	1 day	Tue 8/10/10	Tue 8/10/10	140	Integrator / CS Services
143	Create & Document Router list	1 day	Mon 8/9/10	Mon 8/9/10	141	Integrator / CS Services
144	Creat Managed Network Equipment ob	1 day	Wed 8/11/10	Wed 8/11/10	142	Integrator / CS Services
145	Run SMNP synchronization	1 day	Thu 8/12/10	Thu 8/12/10	144	Integrator / CS Services
146	Cabling association between switches and patch	1 day	Fri 8/13/10	Fri 8/13/10	145	Integrator / CS Services
147	Creat iPatch services list	1 day	Mon 8/16/10	Mon 8/16/10	146	Integrator / CS Services
148	Assign Services to switch ports	1 day	Thu 8/12/10	Thu 8/12/10		Integrator / CS Services
149	Run SNMP- Device discovery	1 day	Thu 8/12/10	Thu 8/12/10		Integrator / CS Services
150	Execute System Acceptance test plan	1 day	Thu 8/12/10	Thu 8/12/10		Integrator / CS Services
151	Update Project Project Schedule	1 day	Fri 8/13/10	Fri 8/13/10	150	Integrator / CS Services
152	Update System Designs	1 day	Fri 8/13/10	Fri 8/13/10		Integrator / CS Services
153	**Integration Deployment Phase**	**1 day**	**Mon 8/16/10**	**Mon 8/16/10**	**152**	**Integrator / CS Services**
154	Integrate all 3rd party software	1 day	Mon 8/16/10	Mon 8/16/10		Integrator / CS Services
155	Integrate final design drawings	1 day	Mon 8/16/10	Mon 8/16/10		Integrator / CS Services
156	Run Integration acceptance test	1 day	Mon 8/16/10	Mon 8/16/10		Integrator / CS Services

Project: iPatch Implementation sample
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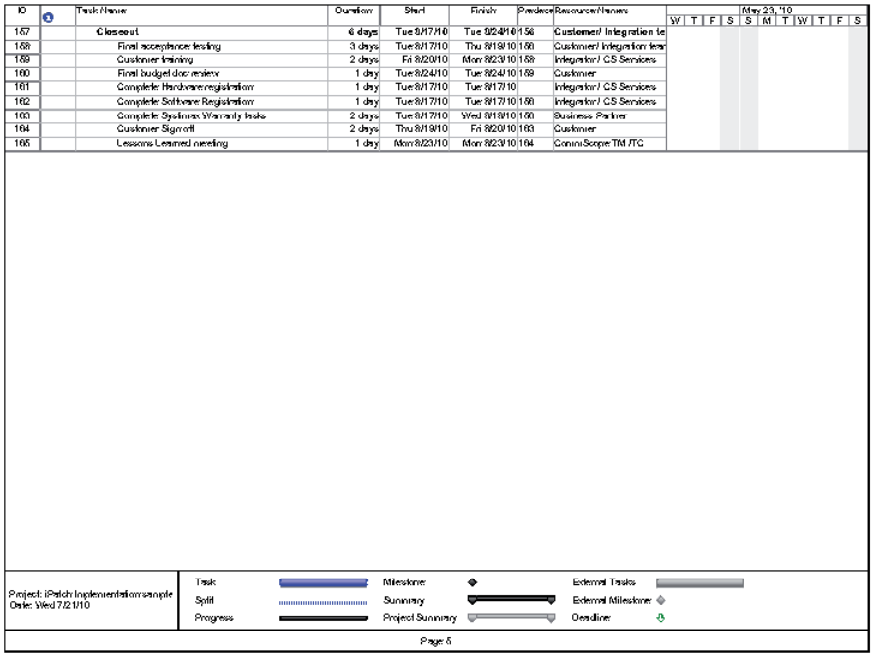

ID	Task Name	Duration	Start	Finish	Predece	Resource Names
167	Closeout	6 days	Tue 8/17/10	Tue 8/24/10	156	Customer/ Integration te
168	Final acceptance testing	3 days	Tue 8/17/10	Thu 8/19/10	160	Customer/ Integration tear
169	Customer training	2 days	Fri 8/20/10	Mon 8/23/10	168	Integrator/ CS Services
170	Final budget doc review	1 day	Tue 8/24/10	Tue 8/24/10	169	Customer
171	Complete Hardware registration	1 day	Tue 8/17/10	Tue 8/17/10		Integrator/ CS Services
172	Complete Software Registration	1 day	Tue 8/17/10	Tue 8/17/10	160	Integrator/ CS Services
173	Complete Systimax Warranty Tasks	2 days	Tue 8/17/10	Wed 8/18/10	160	Business Partner
174	Customer Signoff	2 days	Thu 8/19/10	Fri 8/20/10	163	Customer
175	Lessons Learned meeting	1 day	Mon 8/23/10	Mon 8/23/10	164	CommScope TM /TC

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