SECTION 27 42 20 – COMMON USE SYSTEMS
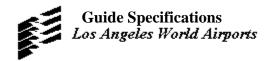
PART 1 – GENERAL

1.01   SUMMARY

A. This Section includes the minimum requirements for common use check-in and passenger processing systems that are to be included in Terminal renovations.

B. Provide a functional extension of the existing common use systems currently being used. Work defined for this Section is for the installation of CUTE/CUPPS equipment and programming of system functionality. All programming, system configuration and set up is proprietary and is to be completed by the existing CUTE maintenance service provider, SITA (Societe Internationale de Telecommunications Aeronautiques). The contact at SITA is Tony Thien, he can be reached at (310) 652-5257.

C. Existing Common Use System Description: SITA CUTE Airport Connect is integrated with various LAWA systems via IBM WebSphere. This integrated platform provides multiple systems including, but not limited to:

1. Electronic Visual Information Displays (EVIDS)
2. Airline Data Feeds
3. IATA Messaging
4. Resource Management
5. Baggage Information
6. Avaya VoIP
7. Other systems

D. SUS workstations provide user access to Airport Connect (CUTE/CUPPS) as well as additional resources available through the Websphere platform.

E. Work defined for this Section includes, but is not limited to:

1. Expansion of the existing SITA Airport Connect Gate Agent Checkin Desk SUS equipment sets
2. Coordination with Networking and Premise Wiring Trades
3. Coordination with Millwork Trades
4. Coordination with Electrical Power Trades
5. Coordination with Airline Data Feeds
6. System Implementation Phasing
7. Systems Programming
8. Systems Testing
9. Systems Training

F. Installation shall include licenses, provisioning of equipment, software and programming, associated with installation of the equipment for a fully functional extension of the existing SITA common use system

G. The Common Use Systems ("Systems") shall integrate with SITA systems currently installed at LAWA. The key elements of systems integration include:

1. Integration with and/or upgrade as required of the existing airport operations database (DB) including an existing storage area network as the data repository.

2. Electronic Visual Information Display System (EVIDS) which includes flight, baggage, dynamic signage, visual paging and way finding signage.

3. Integration / Interfaces with the Passenger Messaging (PM) and the IED paging system including both audio and visual messaging.

4. Resource Management System (RMS) including gate, ticket counter, shared baggage, and bus resource allocation.

5. Shared Use Systems including common use passenger processing (CUPPS) and common use self-service (CUSS).

6. Integration / Interfaces to the Local Departure Control System (LDCS).

7. Interface to the existing LAWA Message Broker System (MB) supporting both international and domestic bag routing messages as required.

8. Voice Over Internet Protocol (VoIP) telephone system.

9. Baggage Reconciliation System (BRS) to support all Terminal operations.

H. Systems shall support all airlines that inhabit the new (renovated) Terminal/Gate Hold area along with alliance partners and charter airlines. It also shall be capable of provisioning domestic carriers that will inhabit the renovated area via the same flexible provisioning systems in use at TBIT.

I. Systems will utilize common physical telecommunications infrastructure. Contractor will provide whatever active data network components are required to interface and integrate with the TBIT TASS and data network.

J. Contractor is responsible for providing all data cabling information and closely coordinating with data cabling subcontractor to ensure that all conduit and Category 6 UTP cabling is provided wherever needed. Contractor is responsible for providing all power load information and closely coordinating with electrical subcontractor to ensure that all conduit, cabling, power circuits (particularly for special needs such as core network switches or servers that require extra power) needed for the components of the Systems in this Specification.

K. Contractor is responsible for providing heat loads in all telecommunications rooms where Systems equipment is to be installed and for closely coordinating with mechanical contractor to ensure that appropriate cooling is provided for the components.

L. Contractor shall include in the Bid all labor, materials, tools, transportation, storage costs, training, equipment, insurance, temporary protection, permits, inspections, taxes, installation, software licenses, software, software integration, all required testing/documentation and all necessary and related items required to provide complete and operational system shown and described in the Specifications.

M. The Contractor is responsible for providing and coordinating final equipment arrangements, locations, phased activities and construction methods that minimize disruption to Terminal operations and provide complete and operational systems.

N. The Contractor shall coordinate with electrical contractor for provision of horizontal conduit and field boxes required to accommodate cabling of all wireless access points and other system equipment.

O. The Contractor shall coordinate specialty electronic, Information Technology (IT) data networks and any other IT infrastructure systems that depend on or are interfaced to Common Use Systems.

P. Related documents included in the scope of this work:
Section 01 11 00 – Summary of Work
Section 01 25 00 – Substitution Procedure
Section 01 31 00 – Administrative Requirements
Section 01 33 00 – Submittal
Section 01 40 00 – Quality Requirements and all sub-sections
Section 01 43 00 – Quality Assurance
Section 01 64 00 – Owner-Furnished Products
Section 01 77 13 – Preliminary Closeout Reviews
Section 01 77 16 – Final Closeout Review
Section 01 78 00 – Close Out Submittals
Section 01 79 00 – Demonstration and Training
Section 27 05 00 – Basic Telecommunication Requirements
Section 27 21 00 – Local Area Network
Section 27 21 33 – Wireless Communication System (Wi-Fi)
Section 27 26 26 – Communications Systems Interfaces
Section 27 51 13 – Paging Systems

Q. Products furnished (but not installed) under this section:

R. Products installed (but not furnished) under this section:

1.02   PRICE AND PAYMENT PROCEDURES

1.03   REFERENCES

A. ABBREVIATIONS AND ACRONYMS

ANSI	American National Standards Institute
AP	Access Point (wireless receive and transmit antenna)
ASTM	American Society for Testing Materials
BFU	Board of Fire Underwriters
BICSI	Building Industry Consulting Services International
BTP	Bag Tag Printer
CSA	Canadian Standards Association
CUPPS	Common Use Passenger Processing System

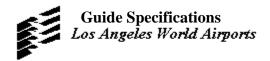|	
CUSS	Common Use Self Service
DEC	Department of Environmental Conservation
DHCP	Dynamic Host Configuration Protocol
DNS	Domain Name System
EIA	Electronics Industry Association
ER	Equipment Room
EVIDS	Electronic Visual Information Display System
FAA	Federal Aviation Administration
FCC	Federal Communications Commission
FM	Factory Mutual
IATA	International Air Transport Association
ICAO	International Civil Aviation Organization
IEEE	Institute of Electrical and Electronics Engineers
ISO	International Standards Organization
LDCS	Local Departure Control System
MB	Message Broker
NEC	National Electrical Code
NEMA	National Electrical Manufacturers' Association
NESC	National Electrical Safety Code
NFPA	National Fire Protection Association
OSHA	Occupational Safety and Health Administration
PM	Passenger Messaging System
RMS	Resource Management System
SITA	Société Internationale de Télécommunications Aéronautiques
SNMP	Simple Network Management Protocol
TASS	TBIT Airline Support System
TBIT	Tom Bradley International Airport
TIA	Telecommunications Industry Association
TR	Telecommunications Room
TWC	Tenant Wiring Closet
UFBC	Uniform Fire Prevention and Building Code
UL	Underwriter's Laboratories, Inc.
UPS	Uninterruptible Power Supply
VoIP	Voice over Internet Protocol
VPN	Virtual Private Network

B. REFERENCE STANDARDS

All work and materials shall conform to and be installed, inspected and tested in accordance with the governing rules and regulations of the telecommunications industry, as well as federal, state and local governmental agencies, including, but not limited to the following:
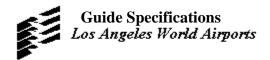
1. IATA RP 1797 Common Use Passenger Processing Systems Technical Specification

2. IATA RP 1797 Common Use Passenger Processing Systems Technical Requirements

3. Latest Version of IATA CUPPS Specification and Recommended Practices as posted at http://www.cupps.aero/documents

4. IEEE 802.11 (a, b/g, n) - Information Technology - Telecommunications And Information Exchange Between Systems - Local And Metropolitan Area Networks - Specific Requirements Part 11: Wireless LAN Medium Access Control (MAC) And Physical Layer (PHY) Specifications

5. ANSI/TIA/EIA-568-C.1 Commercial Building Telecommunications Cabling Standard Part 1: General Requirements, 02/02/09

6. ANSI/TIA/EIA –569-B Commercial Building Standard for Telecommunications Pathways and Spaces, May 2009

7. ANSI/TIA/EIA -606-A Administration Standard for Commercial Telecommunications Infrastructure, 11/24/08

8. ANSI/TIA/EIA -607 - Commercial Building Grounding and Bonding Requirements for Telecommunications, August 1994

9. ANSI/TIA/EIA 862 Building Automation Systems Cabling Standard for Commercial Buildings, 2002

10. FCC 47 Part 68 - Code of Federal Regulations, Title 47, Telecommunications

11. IEEE National Electrical Safety Code (NESC); 2007

12. ISO/IEC 11801 Information Technology - Generic Cabling For Customer Premises

13. LADBS - Los Angeles Department of Building and Safety - City of Los Angeles Electrical Code

14. NEMA 250 Enclosures for Electrical Equipment (1000 V Maximum)

15. NFPA-70 National Electric Code; 2008

16. UL 1863 Underwriters Laboratories Standard for Safety – Communications Circuit Accessories

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordinate all work of this specification with the responsibilities of the Systems Manager. Refer to specification 27-1333 Communications Systems Interfaces.

B. Related works coordination.

C. Coordinate with millwork and power trades to assure proper fit and functionality of CUTE/CUPPS equipment sets in gate check-in desk millwork.

D. Coordinate with Network and PWDS trades to verify proper "single sign on" and general communication support for system. This coordination shall include expansion of the VoIP telephone handset synchronization with authorized sign-on at gate desk SUS workstations. Provide all necessary technical support to the network contractor and the Systems Manager to
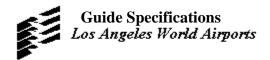
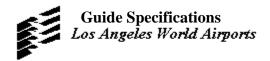successfully develop, test, implement and configure interfaces between the network and the Common Use system.

E. The Common Use System workstations shall include an application that will present the airline user with airline specific calling lists. Selecting a destination phone number in a "click2dial" operation shall cause the adjacent Cisco VoIP telephone to dial the number and connect in speakerphone mode. Lifting the handset on the telephone shall return the call to handset operation. Provide all necessary technical support, configuration programming and coordination to successfully develop, test, implement and configure this functionality.

F. Coordinate with LAWA and Airline Users to plan activation, training and testing of the system.

G. Contractor shall coordinate all work with the "Systems Manager" as defined in Section 27 26 26. Specific coordination tasks include, but are not limited to:

1. Network cabling and outlet assignments for support of Common Use Systems.

2. Data circuit requirements for support of Common Use and interface to existing TASS.

3. IP address assignments and VLAN allocation for support of Common Use.

4. Scheduling activation of Common Use.

5. Equipment labeling and LAWA asset management tracking.

6. Software Change Management approval through LAWA program.

7. System Testing and Commissioning.

H. Other Coordination Requirements: SITA –LAWA Terminal Areas Support Systems (TASS) provider. For the purposes of this project, Terminal Area Support Systems include:

1. Active networks

2. Common Use Terminal Equipment (CUTE) – Common Use Systems

3. Electronic Visual Information Display Systems (EVIDS)

4. Any software updates, patches and revisions shall be approved by the LAWA Change Management Process prior to installation on an active, production system

1.05   SUBMITTALS

A. Contractor shall comply with all LAWA submittal procedures given in other Sections including 27 05 00 – Basic Telecommunications Requirements. The following is in addition to or complementary to any requirements given elsewhere.

B. Block diagrams indicating system architecture, component manufacturers and model numbers, wiring types, and all proposed connections to new and existing equipment.

C. Network identities and system administration records for each workstation shall be coordinated with network service providers and submitted for approval.

D. Contractor shall provide detailed scheduling listing activities, dates and milestones for:

   1. Network Coordination.

   2. Installation of Common Use SUS workstation equipment sets as in locations as noted on drawings.

   3. Testing of SUS workstations and associated peripheral equipment sets for basic functionality.

   4. Testing of SUS workstations and associated peripheral equipment sets for use by each affected airline.

   5. Testing of interface to LAWA Terminal Airport Support System (TASS and subsequent interfaces to VoIP, RMS and EVIDS.

E. Bill of Material: Submit a detailed bill-of-materials listing all manufacturers, part numbers, and quantities that the Bidder proposes to use in this project.

F. Labeling: Submit all proposed labeling materials and nomenclature for approval.

G. Coordination Drawings:

   1. Indicate locations where space is limited for installation and access.

   2. Submit floor plans, elevations, and details indicating major equipment and end device locations. Indicate all floor, wall and ceiling penetrations.

H. Test Plans: The Contractor shall prepare test procedures and reports for the Contractor's field test and the performance verification test. Such procedures must be submitted for LAWA approval at least 120 days prior to installation. Contractor shall provide a step-by-step test plan and procedure with check off lines for LAWA and Airline representative witness initials. Test Plan and Procedures shall include:

   1. Quality control verification of CUTE/CUPPS equipment.

   2. Demonstration of workstation features and functionality.

   3. Testing of interfaces to TASS.

   4. Provision of TASS user interface migration from Avaya to CISCO for VoIP.

   5. Demonstration CUTE /CUPPS workstations and peripheral support of airline applications.

   6. Noted and initialized copies of LAWA and Airline representative's witnessed final performance verification and test/demonstration procedures and report shall be submitted after completion of the test.

I. Training Manuals shall be submitted for approval 120 days prior to training sessions with airlines and LAWA. Training manuals shall include user's troubleshooting guides providing resolution to common use problems with software and hardware. Admin Training Manuals shall include physical and logical data flow and interface diagrams, rack elevations, system configurations, and users troubleshooting guides providing resolution to common use problems with software and hardware.

J.   Post changes and modifications to the Documents as they occur. Drawings will be updated electronically and submitted to LAWA in accordance with the schedule provided for this by LAWA.   Do not wait until the end of the Project. Design Consultant will periodically review Project Record Documents to assure compliance with this requirement.

K.   At every quarter, submit Project Record Documents to Design Consultant for LAWA's records.

1.   Upon completion of the as built drawings, the Design Consultant will review the as-built work with the Contractor.

2.   If the as built work is not complete, the Contractor will be so advised and shall complete the work as required.

L.   Project Record Drawings shall also be submitted in electronic format. Electronic drawing format shall be AutoCAD® Release 2008 or later. LAWA shall have the right and capability to manipulate all electronic file drawings and documentation.

1.06   QUALITY ASSURANCE

A.   The Contractor shall not install any new software types, versions or patches on the active (production) system or LAWA network, without written approval from the LAWA Change Management Process. The Contractor shall be responsible for testing the software change item, prior to submission to the LAWA Change Management Process for approval.

B.   Installations not meeting the approval of LAWA shall be reworked or replaced until acceptable to LAWA.

C.   Standards of workmanship shall meet or exceed IATA industry installation practices.

D.   Refer to Sections 01 40 00 through 01 45 00 and 27 05 00 for additional QA requirements.

1.07   SUBSTITUTION OF EQUIPMENT

1.08   EQUIPMENT CERTIFICATION

A.   Provide materials that meet the following minimum requirements:

1.   Electrical equipment and systems shall meet UL Standards (or equivalent) and requirements of the NEC. This listing requirement applies to the entire assembly. Any modifications to equipment to suit the intent of the specifications shall be performed in accordance with these requirements.
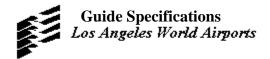

1.09   DELIVERY, STORAGE, AND HANDLING

A.   As specified in Section 27 05 00 – Basic Telecommunication Requirements.

B.   Equipment shall be delivered in original packages with labels intact and identification clearly marked.

C. Equipment and components shall be protected from the weather, humidity, temperature variations, dirt, dust, or other contaminants.

D. Equipment damaged, lost or stolen prior to system acceptance shall be replaced at no cost to the Airport.

E. The Contractor shall protect equipment from theft and vandalism.

1.10   FIELD / ON-SITE REQUIREMENTS

A. The Contractor shall obtain the approval of Engineer or Design Consultant for the final layout of any equipment to be installed in new or existing telecommunications rooms, tenant wiring closets, and casework prior to the installation of any materials or equipment. Shop drawings showing proposed installation details shall be submitted for approval before beginning installation.

B. The Contractor shall furnish an adequate supply of technicians and materials at all times, and shall perform the work in the most appropriate, expeditious, and economical manner consistent with the interests of the LAWA.

C. The Contractor shall be responsible to LAWA for the acts and omissions of its employees, subcontractors and their agents and employees, and other persons performing any of the work under a contract with the Contractor.

D. The Contractor shall not unreasonably encumber the site with any material or equipment. Operations shall be confined to areas permitted by law, permits, and contract documents.

E. The Contractor shall have an experienced Project Manager on site at all times when work is in progress on any project. The individual who represents the Contractor shall be the single point of contact between the Contractor and LAWA, and shall be responsible for the entire project. This representative shall be able to communicate with LAWA or designated representative whenever requested throughout the life of the project.

F. While working in the facility, the Contractor shall not block any entrances, egresses, or other passageways that are necessary for normal, safe operation. It should be noted that the Contractor is responsible to provide any lifts, hand trucks, etc. that it will need to transport its materials and equipment throughout the site.

G. The Contractor shall protect all buildings, walls, floors, and property from damage resulting from the installation. Any and all damage to property shall be repaired by the Contractor at its expense. If the Contractor enters an area that has damage (not caused by the Contractor), the Contractor shall immediately bring this to the attention of the Engineer so the area can be appropriately noted.

H. Following each day's work, the Contractor shall clean up the areas in which it has been working and dump all trash in the appropriate designated areas.

1.11   WARRANTY

A. Materials and workmanship shall meet or exceed industry standards and be fully guaranteed for a minimum of (…..   ) years from Final Acceptance.

B. All labor must be thoroughly competent and skilled, and all work shall be executed in strict accordance with the best practice of the trades.

C. The Contractor shall be responsible for and make good, without expense to LAWA, any and all defects arising during this warranty period that are due to imperfect materials, appliances, improper installation or poor workmanship.

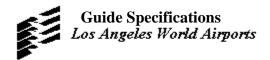D. Submit a copy of all manufacturer warranty information.

PART 2 – PRODUCTS

2.01   GENERAL

A. Due to the rapid advancement and antiquation of hardware technology, the supplied hardware shall be the "contemporary technical and operational equivalent" of the specified hardware. The following requirements shall be met:

1. Contemporary technical and operational equivalent shall be based on a comparison of technology at the time of publication of this Section to the technology at the time of ordering the equipment for each phase.

2. Hardware shall be ordered as close to the actual installation date for a given phase as reasonable (i.e., latest responsible date). Final hardware approval and scheduled order date are at the sole discretion of the Engineer.

3. Hardware equivalence shall be based on both technical equivalence and operational equivalence.

4. Contractor is responsible to verify and certify that newer technologies or models chosen will be compatible with the existing systems and technologies being interfaced or integrated with.

2.02   COMMON USE SYSTEM EXPANSION PRODUCTS

A. Gate Agent Equipment Sets

1. SUS Workstations – HP Product, latest SITA certified model

2. Specialty Keyboards – Access Product, Latest SITA certified model with OCR and MSR readers

3. Boarding Pass Printers – IER 400 or latest SITA certified model

4. Boarding Gate Readers – Access Product, providing magnetic strip and OCR scanning or latest SITA certified model

    5. General Purpose Document Printers (8.5 x 11) Okidata 430 or latest SITA certified model.
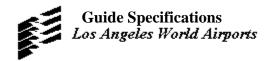
B. System Software

    1. Operating Software – Windows XP

    2. Application Software – SITA Applications

    3. Anti-Virus Software – SITA certified

    4. Include software and software licenses for all software installed

    5. Common Use workstations should scale to support Windows 7 OS and applications.

2.03 MISCELLANEOUS HARDWARE, CABLING AND WIRING

A. Furnish miscellaneous hardware, power and communication cords, cabling and wiring as required to properly install and activate the SUS Workstations and associated peripheral equipment sets.
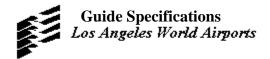
2.04 GENERAL INTEGRATION REQUIREMENTS

A. Contractor shall be responsible for writing all necessary code, performing all stakeholder interviews and data gathering, and performing all data level systems integration and interfaces for the Systems components identified herein.

B. Contractor shall be responsible for the development of Interface Design Documents as follows:

    1. An Interface Design Document (IDD) shall be developed for each interface and shall provide the functional and technical descriptions and guidelines for the required data, hardware, transport, protocol, and software configurations for each interface. This document should reflect standards based protocols, interfaces, and a modular approach to each system to be integrated.

    2. Each IDD shall include the following sections: General Characteristics, General Architecture, Functional Characteristics, Data Formats (as applicable), application programming interfaces, Translation Tables (as applicable), Transport Definition, Physical Characteristics, and Required Hardware/Software Configuration Items.

    3. Each IDD shall be submitted for review and approval in accordance with the overall submittal schedule.

C. All Systems workstations shall have the ability to run all applications and modules that are provided as part of Common Use Systems. This shall include common use applications, database applications, resource management applications, baggage reconciliation applications, and EVIDS applications. As an example, the Systems workstation at a common use ticket counter or gate shall have the ability to perform common use applications as well as EVIDS applications. In the bag makeup location, the Systems workstation shall have the ability to perform common use applications as well as BRS applications. The use of a particular application at a specific workstation shall be secured via user log in access rights.

A simple pointing device or keyboard action shall allow the agent to switch between the common use applications and any other available applications.
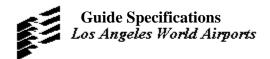
2.05 RESOURCE MANAGEMENT SYSTEM INTEGRATION REQUIREMENTS

A. The Resource Management System (RMS) shall assist Operations in the assigning of common use resources including gates, ticket counters, baggage claim carousels, baggage makeup conveyors, buses, remote gate operations, and off-gate parking stands. The RMS shall provide planning functions, 'best-fit' recommendations, and real-time conflict warnings to assist Operations in the management of these resources.

B. The RMS application shall utilize the existing DB as its database tier for all of its data storage requirements. The RMS shall be fully integrated with the DB and shall utilize it for the storage and retrieval of all RMS application data; this includes current assignments, status (out of service, available, etc.), planned assignments, and other RMS data fields.   The RMS application shall contain and make use of all airport, airline, and other operations organizations related business rules for staff, equipment, and processing parameters.

C. The RMS shall store, access, maintain, and control current (real-time and day of operation) and planned (season schedules) assignment information in the DB for dissemination to other systems such as the EVIDS, MB, and shared use system.

D. The RMS shall access information controlled by other systems (e.g., EVIDS) via the DB such as current flight status and other flight and baggage related information. The RMS shall have an interface to PASSUR data streams, ACARS, SITA Text, Station Manager updates, and LAWA Operations staff updates to assist in making resource assignments. The RMS shall also take FAA related data streams to account for arrival and departure delays due to weather, route congestion, and global aviation system information not readily available via an automated input stream.

E. The RMS shall provide resource information that includes, but is not limited to, gate assignments, baggage carousel assignments, and ticket counter assignments to the EVIDS for incorporation into the information that is displayed on the flight and baggage displays. The RMS shall receive current flight information from all available sources to use in its real-time management of gates and baggage devices.

F. The RMS shall provide the shared use system with resource assignment information in an automated fashion. This shall be the same information that is provided to the EVIDS to support the accurate display of all resource assignments.

G. The MB shall send the RMS current resource information from the baggage handling system (makeup belts unavailable, etc.) for utilization in its resource planning and assignments. The RMS shall transmit baggage resource assignments to the MB.

H. The RMS shall include the appropriate interfaces and integration with the TBIT LAN as necessary to support the functional requirements of the Systems.
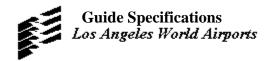
2.06   EVIDS INTEGRATION REQUIREMENTS

A. The EVIDS shall provide flight and baggage information to the traveling public and operational information to other systems and to aviation and airline staff members. This component shall also manage all electronic signage throughout the facility creating a single "administrator" of all dynamic signage. This component shall also allow remote monitoring and management of all the signage connected to the EVIDS platform. The signage to be controlled by the EVIDS shall include but not be limited to, flight, baggage, way finding, visual paging, art features and advertising.

B. The EVIDS shall utilize the DB for all of its database-tier functions. As such, the EVIDS shall receive and transmit data as required via the DB. All data related to flights, baggage, and other information to be displayed on any monitor controlled by the EVIDS shall be stored and accessed via the DB. EVIDS information stored in the DB shall be available for distribution to other systems via the DB.

C. The EVIDS system shall receive two types of flight information from airline host systems. The first type of information is the airline's seasonal flight schedules which are input into the DB via the EVIDS on a periodic basis. This information shall be used to create daily flight schedules. The second type of information is current flight status. This information shall be used to update the daily flight schedules showing both scheduled time of arrival/departure and actual or estimated time of arrival/departure.

1. Airline flight information shall be obtained via multiple methods including a direct link to airline host systems (via WAN interfaces or local TCP/IP connections) and updates via portable media and manual input. In addition to these methods, flight information updates shall be obtained via a third party (real-time) flight information interface utilizing the existing Passur (Megadata) subscription service that is in place at LAX. In implementing these interfaces to tenant host or third party sources, appropriate security measures shall be put in place to ensure data integrity is maintained.

2. The Contractor shall develop "rules" in the DB to set priority for the source of the flight information to be used. These priority rules shall be defined for each airline in coordination with the PMT Representative and the airlines.

3. The interface to host systems shall be through WAN interfaces (T1, frame relay, etc.), or local Ethernet or RS-232/485 with the specific connection dependent on the individual host. The Contractor shall coordinate with each airline operating in the Terminal to determine the specific interface requirements. These interfaces may also be incorporated as a part of other modules or Systems applications.

D. The EVIDS shall control the information on all electronic displays throughout the Terminal. All information to be displayed shall be stored in the DB and formatted by the EVIDS for display on the specific display device. The displays supported include; public display banks art features, gate displays (counter, backwall, PBB, and general gate information), ticket counter displays (backwall and ANDS), baggage makeup operational displays, public baggage displays, and visual information displays. A brief description of the functionality of each sign type is provided below. The final functional requirements for each type of signage will be established during the required design workshops.

1. Public display banks – these displays will show information related to flight status including, but not limited to; city of origin/destination, scheduled time of departure/arrival, estimated time of departure/arrival, remarks/comments, baggage carousel assignment, etc. The information displayed on these monitors shall be provided through the DB and information will be updated through automated feeds and manual input.

2. Gate displays – these displays will show gate related flight information. The system shall configure these displays to show the appropriate information related to gate usage (i.e. flight number, airline, destination, etc.) when assigned through the RMS. In addition, the local gate operator (with the appropriate log in credentials) shall have override capabilities to modify the information displayed.

3. Ticket counter displays – these displays will show ticket counter related information including, but not limited to, airline name and logo, flight information, position information (e.g. open/closed, first class, ticketing, etc.). Upon assignment from the RMS, the displays shall automatically be configured to display the appropriate airline and their desired "default" display. In addition, the local ticket counter operator (with the appropriate log in credentials) shall have override capabilities to modify the information displayed.

4. Baggage makeup operational displays – these displays will show flight related information that is pertinent to the baggage handling operators. Information displayed on these devices will be from assignments provided by the RMS and from the data associated with EVIDS (i.e. flight arrival/departure times, gate, bag claim device, etc.).

5. Public baggage displays – these displays will show flight information on the baggage carousel. This will display the arriving flight number and origination city for the public. Information displayed on these devices will be from the database (from EVIDS and RMS) and may be manipulated by the baggage handlers via input through the baggage input consoles.

6. Visual information displays – these displays will show visual paging information from inputs provided by the passenger messaging system.

E. The EVIDS shall interface with the audio portion of the IED Public Announcement System (via Passenger Messaging – PM) to provide the ability to visually display messages that are audibly broadcast. The PM interface shall provide the ability to synchronize visual and audio messages.

F. The EVIDS shall interface with the video portion of the PM to provide the ability to display any visual announcement on any EVIDS display device.

G. The EVIDS shall support multiple input devices for the updating, configuration, and manipulation of flight and other display information. The inputs that shall be supported include baggage input consoles and TASS workstations. All input devices shall be interfaced through a standard LAN connection.

H. The Contractor shall provide control of the dynamic visual displays and associated equipment in the Terminal including Ticket Counter backwall displays, Gate Counter backwall and Passenger Loading Bridge (PLB) displays, Baggage Information Displays (BIDS) and

Baggage Input Consoles (BICs), Airline Name Displays (ANDS), and Airline Assignment Displays (ticket counter locations).

I.   The EVIDS shall be interfaced to the Resource Management System to provide and receive flight updates and resource assignments.

J.   EVIDS displays associated with allocated resources (i.e., ticket counter displays, gate counter displays, loading bridge displays, etc.) shall display the most recent assignment information as provided by the RMS. The changing of displayed information shall be triggered by RMS assignments and scheduling through the DB.

K.   The RMS assignments / schedules shall trigger associated EVIDS displays on and off times. The RMS assignments / schedules shall trigger information display and removal on associated EVIDS displays. Trigger time shall be based on RMS schedules plus/minus a system configurable (on a per display per location basis) amount of time.

1.   The day of operation's resource allocation shall determine the associated EVIDS signage display information (based on airline defined preferences). The day of operation resource allocation shall determine display information start and stop times.

2.   Any authorized modifications to the day of operation's allocation assignments in the RMS shall adjust dynamic signage display information accordingly.

3.   Final configuration and sequence of operation shall be coordinated with each airline and LAWA Operations.

4.   EVIDS signs, associated with unassigned resources, shall display a pre-defined screen (e.g., LAX logo). The pre-defined, default, screen shall be assignable on a per location per display basis.

L.   EVIDS should provide standard API capabilities for potential future interface requirements.

M.   EVIDS shall provide real-time flight information to the MB for baggage related messages allowing for proper sortation of baggage.

N.   The EVIDS systems shall provide a provision to interface with Passenger Messaging and Common Use Systems to automatically alert passengers of scheduled changes in operations.
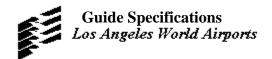
2.07   PASSENGER MESSAGING INTEGRATION REQUIREMENTS

A.   The passenger messaging application (PM) shall control the broadcast of public messaging information to the traveling public in both an audio and visual format utilizing the IED Public Address System (refer to Section 27 51 13) and EVIDS display devices respectively. This information shall include public announcements, personal pages, and flight information specific to individual gate areas. The system shall also include mechanisms for generating messages for airport and airline staff and shall provide for the ability to retrieve messages in an audio or visual format.

B.   The visual portion of the PM shall be fully integrated to the EVIDS and data pertaining to this function shall be stored in the DB.

C. The audio portion of the PM shall be interfaced to the IED paging system and shall not have a direct link to the DB; however, common information such as messaging statistics (announcement logs, retrieval times, courtesy announcement records, audio messages, etc.) that are controlled by the PM shall be stored within the DB.

D. The PM shall be integrated with the EVIDS and interfaced with the IED paging system to synchronize the broadcast of audio messages with visual messages.

E. The PM shall maintain overall control and administration of both visual and audio announcements. The PM shall provide the ability to monitor and administer the retrieval of messages from the system.

2.08 SHARED USE SYSTEM AND CUSS INTEGRATION REQUIREMENTS

A. The shared use system shall allow multiple airlines to operate in the facility using their host software and a common set of compatible hardware, increasing the flexibility and efficiency of the facility.

B. The shared use system shall provide the use of each airline's native system from all shared use system locations within the Terminal. The shared use system shall allow the extension of the airline host network onto the telecommunications infrastructure through a secure connection.

C. The shared use system provided shall ensure that any applications which are available on the host system are also accessible through the shared use system. As such, the airline processes shall be no different than their operations at a non-common use airport.

D. The shared use system shall provide connection for the shared use system workstations to each participating airline's host computer (e.g., System One, Sabre, etc.) via a dedicated interface that is specifically configured to meet the individual airline requirements (e.g., gateway, router, etc.).

E. The shared use system shall provide access to the LDCS via the shared use system workstations. The LDCS shall include a self-service interface. The LDCS self-service application shall be accessible on the CUSS kiosks.

F. The RMS shall control and provide all resource allocations for specific users. The shared use systems shall fully support the schedule of resources developed by the RMS. As such, when the RMS has assigned a resource to a specific user, the applications and functionality required by the assigned user shall be available on the assigned resource during time slot allotted by the RMS. Conversely, if the RMS has not assigned a specific user to a resource, the resource and all applications and functions shall not accessible to that user. However, any assigned or unassigned resource shall be able to be manually overridden at the workstation level with the appropriate log in credentials.

G. The RMS and shared use systems shall provide the ability to block any user from the utilization of any resource. The default configuration at each shared use resource shall be to deny access, unless it has been assigned by the RMS.

H. The shared use system shall be interfaced with the VoIP system to dynamically assign the VoIP handsets to match the shared use system requirements. Once resource assignments are made by the RMS and transmitted to the shared use system, the shared use system shall configure the VoIP handset at the assigned resource into the appropriate configuration. The system shall allow the specific telephony requirements associated with each tenant to be dynamically allocated to any shared use system station regardless of physical location.

I. The existing SITA Common Use Terminal Equipment (CUTE) system shall be accessible through any workstation associated with the new shared use system. Any airline selecting to use the SITA CUTE must be able to access the SITA CUTE at any shared use system workstation.

J. The BRS shall be interfaced with the shared use system and LDCS to receive Baggage Service Messages to support all baggage reconciliation functionality.

2.09   MESSAGE BROKER (MB) INTEGRATION REQUIREMENTS

A. The MB will serve as the information broker for passenger related information that is contained within the Airlines Departure Control System. This includes baggage service messages (and other related bag messages) to support the Terminal baggage sortation system, inter-airline transfers, baggage reconciliation, and inter-terminal transfers throughout the LAX campus as well as other information including any data regarding the security status of a given passenger when that capability is made available by the Airlines host systems.

B. The MB will include its own data storage repository (database). The DB shall replicate required database tables and fields to the MB database. The replicated data includes baggage resource assignments, flight information data, and baggage information.

C. In turn, the MB shall replicate a limited number of fields or tables to the DB including equipment status and statistical data. The MB fields shall be replicated to the DB to provide overall integration with other TBIT systems.

D. The MB shall obtain real-time flight from the EVIDS and resource information from the RMS via the DB to pass to the BHS for the proper sortation of baggage.

E. The MB shall provide BHS specific resource information (carousels out of service, etc.) to the DB for use by the RMS for the proper allocation / reallocation of resources.

F. The MB, the shared use system, and the LDCS shall be interfaced to send / receive Baggage Service Messages to the baggage reconciliation system.

G. The MB shall also be integrated with airline host systems or a message.

2.10   BAGGAGE RECONCILIATION SYSTEM INTEGRATION REQUIREMENTS

A. The BRS shall be interfaced with the Shared Use System, the LDCS and the Message Broker System to receive IATA compliant baggage services messages. These messages will include all IATA defined BSMs including; Baggage Transfer Message (BTM), Baggage Source

Message (BSM), Baggage Processed Message (BPM), Baggage Unload Message (BUM), Baggage Not Seen Message (BNS), Baggage Control Message (BCM), and Baggage Manifest Message (BMM). These messages will be stored in the BRS database allowing the system to construct and maintain information of the baggage being processed.

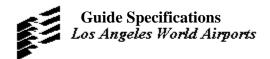## 2.11 LOCAL DEPARTURE CONTROL SYSTEM INTEGRATION REQUIREMENTS

A. The LDCS will provide automated check-in departure control for non-hosted airlines and will support irregular flight operations for all airlines operating out of the Terminal.

B. The LDCS shall interface with the RMS so that it can be provided with resource assignments.

C. The LDCS shall interface with the MB and BRS to transmit and receive Baggage Service Messages (BSM) for baggage checked. The LDCS shall transmit this information via Systems to the MB and BRS. The LDCS shall also receive baggage processed messages from the MB and BRS.

D. The LDCS shall have a data replication interface with the DB to transmit statistical and accounting data to the DB and to receive required data for LDCS operations.

E. The LDCS shall interface with all peripheral devices including, but not limited to, 2D Bar Code Printer, BTP, document printer, and Bar Code Scanner.

F. Any Systems workstation shall have the ability to run the LDCS. These workstations shall be fully functional workstations. A simple pointing device or keyboard action shall allow the agent to switch between the LDCS and any other available applications.

2.12   VoIP INTEGRATION REQUIREMENTS

A. The VoIP system shall be implemented to support the dynamic nature of a shared use environment and shall allow telephony services to be dynamically and temporarily allocated to specific locations throughout Terminal. With the VoIP system in place, a tenant's telephony functional requirements shall be met regardless of their location throughout the Terminal.

B. Based on RMS assignments, the VoIP handsets shall be dynamically configured to provide the assigned user's full set of telephone functionality, regardless of the location of the handset within the LAX campus. This functionality shall be based on successful user login and validation through the system. The shared use system shall provision the VoIP handset configurations and the specific handset configurations shall be accessible in the DB.

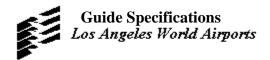## 2.13 STORAGE AREA NETWORK (SAN) INTEGRATION REQUIREMENTS

A. As a key hardware component to the DB, a Storage Area Network (SAN) shall be provided. The SAN shall provide the basis for data storage and archival for the Systems. The SAN shall provide a highly resilient and easily expandable data storage platform that shall provide a structured means to grow hard drive storage for data systems.

B. The SAN will not be limited to data storage for the DB only, but shall also support future system's and module's storage requirements.

C. A secondary, offsite SAN, shall be provided for further redundancy. The location of this SAN shall be coordinated with the Engineer.

2.14   PRIMARY SERVERS

A. The Contractor shall recommend and provide the server configuration that best serves the Contractor's overall design solution. LAWA's existing standard for server technology is based upon Hewlett Packard®. Alternative solutions for high processor capacity servers may be submitted for review and approval.

B. The servers shall be fault tolerant via clustering, mirroring or other vendor technology. The implemented configuration shall allow a server to be powered down and replaced without disruption to the network or applications. Server failover shall occur if the primary server fails for any number of reasons including: power failure, hardware failure, software failure, and network connection failure. Multiple load sharing application servers or other configurations shall be considered viable alternatives to redundant application server pairs if equivalent or improved system redundancy and resiliency can be demonstrated. The system shall be configured as a geographically distributed clustered and/or load balanced server cluster. These systems shall be installed at two separate core rooms in the Terminal. The server solutions shall be available for 99.9999% on an annual basis.

C. Servers shall be standard 19-inch rack mountable.

D. Servers shall be capable of upgrading the number of processor units by simply adding another processor or processor card.

E. Servers shall be "dual-homed" to the LAN core switches via server grade Gigabit Ethernet NICs. Final requirements and configuration shall be coordinated with Design Consultant.

F. Disk Storage: Total useable disk capacity shall be at least 4 times the estimated storage requirements of the application and operating system. RAID shall be implemented as best suits the application. Internal RAID 6 shall be provided unless justification for alternative configuration is provided. RAID shall not be implemented via the operating system, but by a hardware controller. Disk arrays shall have open frames to allow the capacity to be doubled by addition of RAID drives without system shutdown. Disk storage systems shall be configured so that an increase in capacity of 33% can be made without purchasing any other components other than the disk drives.

G. Monitor: Shared rack-mounted monitor per rack (provide rack-mounted input switching device). The monitor provided shall meet the requirements provided under the section titled Workstation Monitors.

H. Servers shall be configured to meet or exceed the minimum hardware requirements detailed below and also meet or exceed the performance, operational, and functional requirements of this Specification.
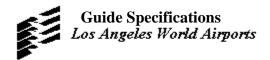
2.15 FILE SERVERS

A. Two (2) 2.8 GHz processors (latest version) with 1MB cache. Architecture should be Intel or RISC as required by the operating system.

B. 1 GB DDR2 400 MHz RAM. Sufficient memory shall be provided to meet the maximum transaction load and ensure the memory is never a restriction on system performance

C. Minimum 72 GB useable internal hardware RAID 6 disk storage (10,000 rpm)

D. Two (2) NICs (server-class card) for LAN connection (coordinate network requirements with network administrator)

E. Minimum 72 GB internal Tape Backup Unit with SCSI card and back up software

F. 24X IDE CD-RW/DVD ROM drive

G. Remote Access Card

H. Multiple hot-pluggable redundant power supplies

I. Standard windows keyboard and USB 2-button wheel mouse

J. Minimum of two (2) USB 2.0 ports

2.16 APPLICATION SERVERS

A. Two (2) 3.2 GHz processors (latest version) with 1MB cache. Architecture should be Intel or RISC as required by the operating system.

B. 4 GB DDR2 400 MHz RAM. Sufficient memory shall be provided to meet the maximum transaction load and ensure the memory is never a restriction on system performance

C. Minimum 36 GB useable internal hardware RAID 6 disk storage (10,000 rpm)

D. Two (2) NICs (server-class card) for LAN connection (coordinate network requirements with network administrator)

E. Minimum 36 GB internal Tape Backup Unit with SCSI card and back up software

F. 24X IDE CD-RW/DVD ROM drive

G. Remote Access Card

H. Multiple hot-pluggable redundant power supplies

I. Standard windows keyboard and USB 2-button wheel mouse
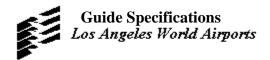
J. Minimum of two (2) USB 2.0 ports

2.17 DATABASE SERVERS

A. Four (4) 2.7 GHz processors (latest version) with 2 MB cache. Architecture should be Intel or RISC as required by the operating system.

B. 8 GB DDR Mirroring. Sufficient memory shall be provided to meet the maximum transaction load and ensure the memory is never a restriction on system performance

C. Minimum 144 GB useable internal hardware RAID 6 disk storage (10,000 rpm)

D. Two (2) Host Bus Adapters for redundant data storage system interface (refer to data storage system requirements for further details)

E. Two (2) NICs (server-class card) for LAN connection (coordinate network requirements with network administrator)

F. Minimum 144 GB internal Tape Backup Unit with SCSI card and back up software

G. 24X IDE CD-RW/DVD ROM drive

H. Remote Access Card

I. Minimum of two (2) USB ports

J. Multiple hot-pluggable redundant power supplies

K. Standard windows keyboard and USB 2-button wheel mouse

2.18 DATA STORAGE SYSTEM

A. A Storage Area Network (SAN) shall be provided to accommodate data storage and retrieval for the TASS. The SAN shall provide the sharing of data among different servers in a network, disk mirroring, backup and restore, archival and retrieval of archived data, and data migration from one storage device to another.

B. The Contractor shall implement a Tier 1 storage environment to aggregate the Tier 2 systems being deployed for all systems with TBIT. This Tier 1 solution shall include IBM SAN Volume controller, Fiber Channel component architectures for integration, and Tier 1 controllers and backup systems.

C. The Contractor shall provide only the necessary resources to support the integration of the building systems data, back-up and recovery, and business continuity and disaster recovery for the TBIT programs. The Contractor shall provide operations and guidance to LAWA ITS staff as needed for operational support and integration to the LAWA ITS campus wide SAN systems.

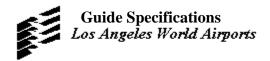D. IBM System Storage solution, or approved equivalent

2.19   UNINTERRUPTIBLE POWER SUPPLIES

A. All server and local area network equipment installed in telecommunications rooms shall be UPS backed to prevent unnecessary service interruptions. The Contractor shall be responsible for coordinating with the CMJV and PMT to ensure that existing UPS capacity will support the additional load of the new equipment. In any case where new hardware is installed in a location where the capacity of the existing UPS is exceeded, it shall be the responsibility of the Contractor to supplement or replace the UPS in such a fashion that the UPS is capable of supporting required load for the minimum period of time.

B. The UPS equipment shall have batteries that are capable of being replaced in the field.

C. The UPS interface port shall have a 10 Base-T Ethernet for LAN management.

D. Each UPS shall provide a minimum of 30 minutes standby power at full load.

E. The UPS shall be rack mountable in a standard 19 inch equipment rack/cabinet.

F. The control panel shall have a LED status display for load and battery bar-graphs in addition to replace battery and overload indicators.

G. Each UPS shall include software and interface card to provide Web/SNMP management through 10Base-T Ethernet port. Management software shall include the following attributes:

1. Shall allow complete configuration of the UPS devices from a remote location

2. Shall provide periodic UPS self-tests

3. Shall provide full control over UPS transfer settings

4. Shall provide user name and password security

5. Shall log all power events with a description

H. Standard UPS warranty of two years shall be provided. Contractor shall submit recommended standard and optional warranty and maintenance plan per TASS RFP.

2.20   SYSTEM WORKSTATIONS

A. LAWA standard desktop is manufactured by Hewlett Packard.

B. Performance Workstation

1. 3.6 GHz Pentium 4 processor with hyper threading technology

2. 4 GB DDR2 SDRAM

3. 160 GB ATA Hard Drive (7200 rpm)

4. 10/100/1000 Mbps Ethernet card

5. 128 MB PCI Video card

6. 48x CD-RW drive plus 16x DVD+RW/+R drive

    7.   2 serial ports, 1 parallel port, and 4 2.0 USB 2.0 ports

    8.   Standard windows keyboard and USB 2-button wheel mouse

    9.   21-in LCD monitor (refer to monitor requirements)

C. Standard Workstation

    1.   3.2 GHz Pentium 4 processor with 1 MB cache

    2.   1 GB RDRAM

    3.   80 GB ATA Hard Drive (7200 rpm)

    4.   10/100 Mbps Ethernet card (auto-negotiating)

    5.   64 MB PCI Video card

    6.   48x CD-ROM

    7.   2 serial ports, 1 parallel port, and 4 USB 2.0 ports

    8.   Standard windows keyboard and USB 2-button wheel mouse

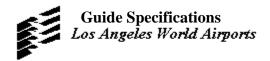   9.   17-in LCD monitor (refer to monitor requirements)

D. Display Device Controllers (DDC)

    1.   Device Display Controllers are being provided by the base project. If any new DDCs are required they shall match the DDC configuration provided by the base project.

2.21   INTEGRATED SYSTEM DEVICES

A. CUSS Kiosk

    1.   The CUSS Kiosks shall be full function kiosk with a modular design for improved scalability. It shall provide ease of use. A lockable panel shall be provided for easy authorized access to internal components for maintenance. The kiosks shall conform to the following, as a minimum:

        a.   Compliance with IATA/ATA

        b.   Compliance with ADA

        c.   Stand alone version

        d.   17-in touchscreen, card reader, and ticket printer

        e.   Powered by a PC meeting the requirements of a performance workstation

        f.   Baggage tag printer

        g.   Thermal 1D/2D barcode printer

        h.   Card reader (credit card, frequent flyer card, and contactless smart cards)

        i.   Passport reader

        j.   Optional 1D/2D barcode reader

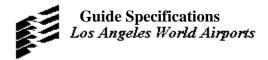   k.   Compatible with IEEE 802.11 wireless communications

l. Ability to provide customization with CMJV specific signage and markings (to be coordinated with the CMJV)

m. Include a leaflet holder

n. Be supported by CUSS middleware

o. Include CUSS remote monitoring software to manage both the hardware and the CUSS applications of the kiosk

2.22   WORKSTATION MONITORS

A. Payment module

B. Workstation Monitors shall meet, at a minimum, the following requirements

1. 17-in flat screen monitor shall meet the following minimum requirements:
    a. 1280 x 1024 @ 75 Hz refresh rate
    b. Pixel Pitch 0.264mm (H) × 0.264mm (V)
    c. 4:3 aspect ratio
    d. 17-in viewable area
    e. Viewing angle of 140 degrees
    f. Contrast ratio of 400:1
    g. Brightness of 250 candelas/meter2

C. 20-in LCD monitor shall meet the requirements of 20-in LCD displays under LCD displays.

2.23   LCD DISPLAYS

A. 20-in LCD: 20-in LCD monitors are being provided by the base project. Any new monitors provided by the TASS shall meet the following minimum requirements:

1. 1600 x 1200 native resolution

2. 0.255 mm pixel pitch

3. 16:9 aspect ratio

4. Response time 16 ms

5. Viewing angle minimum 170 degrees

6. Contrast ratio of 400:1

7. Brightness of 250 candelas/meter2

B. 32-in LCD: 32-in LCD monitors are being provided by the base project. Any new monitors provided by the TASS shall meet the following minimum requirements:

1. 1366 x 768

2. 0.511 mm pixel pitch

3. 16:9 aspect ratio

4. Viewing angle of 176 degrees

5. Contrast ratio of 600:1

6. Response time 18 ms

7. Brightness of 500 candelas/meter2

C. 40-in LCD: 40-in LCD monitors are being provided by the base project. Any new monitors provided by the shall meet the following minimum requirements:

1. 1366 x 768

2. 0.641 mm pixel pitch

3. 16:9 aspect ratio

4. Viewing angle of 176 degrees

5. Contrast ratio of 1000:1

6. Brightness of 450 candelas/meter2

D. 46-in LCD: 46-in LCD monitors are being provided by the base project. Any new monitors provided by the TASS shall meet the following minimum requirements:

1. 1366 x 768

2. 0.746 mm dot pitch

3. Viewing angle of 178 degrees

4. Contrast ratio of 1000:1

5. Brightness of 450 candelas/meter2

2.24   PERIPHERAL DEVICES

A. Baggage Input Console

1. Baggage Input Consoles (BIC): There will be Baggage Input Consoles located throughout the baggage breakdown area for use by the baggage handlers. The BICS shall have the following minimum attributes:

    a. The BIC shall be a workstation with an integrated touch-screen with the following minimum requirements:

        1) Pentium III 500 MHz.

        2) 256 MB DRAM.

        3) Internal 10 GB hard drive.

        4) Integrated, bus-mastering Fast Ethernet (10 / 100 Mbps) controller.

        5) 8 MB video adapter.

        6) 15" LCD TFT resistive touch-screen capable of 1024x768 resolution.

        7) Rugged, spill resistant ABS housing suitable for harsh, high-use environments such as the baggage make-up levels of the Airport.

      b.   The Contractor shall provide materials to mount and attach the BICs in the required area of intended operation. The Contractor shall coordinate exact BIC mounting locations with the CMJV and PMT.

      c.   SuperLogics model SL-PPC-150A, or approved equivalent.

B. 2D Ticket Printer

    1.   A receipt style printer shall be provided that is able to print 2D (PDF417) barcodes. The barcodes shall include machine-readable boarding pass data formatted to support single segment, multi-segment, and interline data encoding.

    2.   Interface: USB.

    3.   The Contractor is required to determine additional 2D printer requirements in coordination with tenant requirements.

C. Bag Tag Printer (BTP)

    1.   Interface: Ethernet LAN (TCP/IP)

    2.   The printers shall be set up for direct thermal printing only. The printers shall not include a cutter or burster.

    3.   The BTP shall conform to the IATA resolutions relating to ATB's and shall be compatible with the AEA specification for PECTAB's. All required firmware shall be provided and installed.

    4.   The Contractor is required to determine additional bag tag printer requirements in coordination with tenant requirements.

D. Optical Character Recognition (OCR)

    1.   Desko BMOL 4000 with integrated OCR or PMT approved equivalent substitution. Option pricing shall be provided for the AiT PAX Reader.

    2.   The OCR shall be capable of reading passports and other standard travel documents.

    3.   Per unit option pricing shall be provided for a bar code scanner, smart card reader, photo ID scanner, and fingerprint sensor along with the required drivers.

    4.   The Contractor is required to determine additional OCR requirements in coordination with tenant requirements.

E. Boarding Gate Reader (BGR)

    1.   The supplied BGR shall read 2D bar code printed boarding documents and shall support the various functional requirements of all airlines supported by TASS.

    2.   All required firmware shall be provided and installed.

    3.   The Contractor is required to determine additional boarding gate reader requirements in coordination with tenant requirements.

F. Shared Use System Standard Printer (DOC)

    1.   LaserJet printer with the following minimum specifications:

      a.   Print speed up to 25 pages per minute (ppm)

      b.   Utilize laser print technology

      c.   1200 x 1200 dpi resolution

      d.   Two (2) paper trays

      e.   Support 8.5 x 11 and 8.5 x 14 inch paper

      f.   Minimum memory 64 MB

G. IP addressable:

  1. The Contractor is required to determine additional document printer requirements in coordination with tenant requirements.

H. General Document Printer:

  1. Provide two (2) general document printers. The location of the printers shall be coordinated with the PMT.

  2. The specifications shall be that of the shared use system Standard Printer.
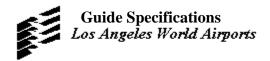
I. BRS Handheld Scanner:

  1. Ruggedized wireless handheld device for scanning bag tags with the following minimum specifications:

      a.   WLAN – Compatible with 802.11 a/b/g

      b.   53 key keyboard

      c.   Minimum RAM – 64 MB

      d.   Data capture – 1D and 2D supported

      e.   Drop specification – multiple drops to concrete: 6 feet / 1.8 meters

      f.   Electrostatic discharge: ±15 kVdc air discharge; ±8 kVdc direct discharge; ±8 kVdc indirect discharge

      g.   Sealing: IP64 (electronic enclosure, display, and keypad)

      h.   Rechargeable batteries

  2. Environmental:

      a.   Operating Temperature: -4º to 122º F

      b.   Charging Temperature: 32º to 104º F

      c.   Storage Temperature: -40º to 158º F

      d.   Humidity: 5% to 95% non-condensing

      e.   UL Certified

2.25   SOFTWARE

A. Software provided shall be at least 32-bit based applications. Software shall be built around a compliant operating system as defined in this Specification.

B. The Contractor shall deliver all required system and application software for a fully functioning Integrated IT System. Each shall be identified by the generic, off-the-shelf name.

The software provided by the Contractor to operate the Systems shall be delivered in a ready-to-run form, including all necessary utility programs and documentation.

C. The systems shall use industry standard components. The systems shall not contain any proprietary interfaces or components. The system shall use industry standard application development software such as Java, JavaScript, Perl, Visual Basic, C/C++ and XML. CMJV approval shall be required for use of alternative application development software.

D. All new inter-relationships between the applications, databases, and operating system shall be the responsibility of the Contractor.
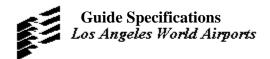
2.26   USER INTERFACE

A. Systems shall have an interface to manage data and the individual applications. The user interface shall provide a common look and feel for each component and/or application.

B. The user interface shall, to the extent feasible, be web enabled to provide additional flexibility for the users of the system.

C. The client Operating System user interface shall be configured to limit access to each application based on user login. Authorized users shall select an authorized application(s) to execute (e.g., shared use system, EVIDS, DB, BRS, RMS application) from the client desktop.

D. Software modules shall have a Graphical User Interface (GUI) and use a true windowing navigation interface.

E. The system shall support a pointing device, touch screen, and keyboard interface. Standard pointing device actions shall have a "hot key" equivalent. Pointing device functions without a "hot key" equivalent shall be noted.

F. The systems shall provide context sensitive, on-line help capabilities. The online help system shall contain enough information to inform the user of the nature of the current form/window, and provide a reference for the user to gather further information. The Contractor shall populate the on-line help messages prior to Performance Verification Testing and provide a facility for maintenance and update of online help.

2.27   SYSTEMS ARCHITECTURE

A. Operating System

1. Server Operating System: The Contractor shall select a standardized Operating System to use across all servers such as Windows (latest version). The proposal shall specify the server operating system(s) along with any exceptions. The server operating system shall support Symmetric Multi-Processing (SMP). Systems applications provided shall take advantage of the SMP server capabilities.

2. Client Operating System: Client and desktop devices shall use the Windows XP Professional operating system, or approved equivalent.

3. The operating system for the Contractor's products shall meet the minimum criteria below. All exceptions shall be noted in the contractor's bid.

    a. 64-bit, multi-tasking, multi-threading.

    b. Support TCP/IP network protocol.

    c. Latest version and service pack of the operating system at time of initiation of systems testing.
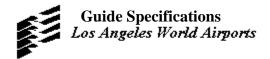
B. System Architecture

1. The systems shall adhere to a Client / Server model. The end devices shall be the clients to the primary/secondary servers. All information shall be communicated between the server(s) and the clients via the assigned Virtual Local Area Network (VLAN).

2. Network connectivity shall be via the assigned VLAN on the data network provided by this Section. Network communications shall utilize TCP/IP network communications protocol. The Contractor shall identify the network bandwidth requirements such as 10 Mb, 100 Mb, or Gigabit Ethernet.

3. End device addressing shall be coordinated with the LAWA.

4. Sufficient resiliency / redundancy and logic shall be provided to assure that the availability objectives (refer to Performance Requirements) can be met without manual intervention. All major system hardware components shall be designed so that there is not any single point of failure that can cause operations to be disrupted.

5. The system shall synchronize the date and time on all devices. The system servers shall receive a time synchronization signal from the local area network using the Network Time Protocol (NTP).

6. Workstations shall support web access without rebooting or changes to the workstation configuration.

7. The systems shall use industry standard components. The systems shall not contain any proprietary interfaces or components.

8. System components shall be independent and capable of co-existing on the system to allow for an increased level of capacity. Modular design and flexibility shall be provided for easy expansion of the system without degradation to the system's performance.

C. Database

1. The Systems will be integrating with and upgrading as necessary the existing TBIT TASS database. The requirements below are given to assure the new Systems database requirements are consistent and compatible with the existing system.

    a. The provided database(s) shall be capable of supporting real time data warehousing. The database(s) shall use a common relational database to store all data. The database(s) shall be based on accepted and recognized industry standards. The LAWA preferences for databases are MS SQL or Oracle. The TASS database is Oracle.

    b. The database(s) shall be open database connectivity (ODBC) compliant and support the simple object access protocol (SOAP).

2. Database Architecture: The database(s) shall meet the following requirements:

   a. Provide read consistency (data seen by a statement is consistent with respect to a single point-in-time).

   b. Provide creation of a read-consistent set of data when a table is being queried (read) and simultaneously updated (written).

   c. Provide original data values upon query when updated transaction remains uncommitted.

   d. Utilize rollback methodology for uncommitted transactions.

   e. Utilize record locking mechanisms to prevent simultaneous updates to the same record. Only the record(s) being updated shall be locked.

   f. Provide support for both distributed processing and distributed multiple databases along with standard DML operations, including queries, inserts, updates, and deletes of remote table data.

   g. Provide support for automatic recovery from system or network failures (i.e., automatically commits or rolls back any in-doubt distributed transactions consistently on all involved nodes when a failure occurs).

   h. Provide referential integrity for all data such that modifications to current data does not affect historical data.

   i. Provide capability of online "live" backup of all database objects.

   j. Provide capability of "point of failure" recovery of all database objects within one hour of the failure (i.e., dump transaction logs hourly) with a native utility package.

3. Database Security: Third-party database and reporting tools shall support database security functions. Database security shall include the following items as a minimum:

   a. Encryption capability for defined data fields within database objects such as tables or views

   b. Prevention of unauthorized database access

   c. Prevention of unauthorized access to schema objects

   d. Control of system resource usage (such as CPU time)

   e. Auditing of user actions and database transactions

   f. Assignment of valid username/password combinations

   g. Assignment and control of resource limits for a user including hardware, database and application resources

   h. Control of user access rights including database, table, record and field level authority

   i. Control of which system functions a user can perform

4. The Contractor shall submit all database schema(s) for review and approval. The Contractor shall coordinate with the LAWA, airlines, and applicable third party vendors to identify unique database requirements. The Contractor shall add needed fields as requested by LAWA. The database(s) shall be designed such that the addition of fields and/or tables is easily accommodated. The database schema shall be provided in a chart format showing all tables, key fields, and hierarchical relationships.
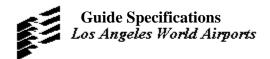
5. SQL: The utilized native structured programming language shall be storable in the database. The database shall employ a native structured programming language that can utilize standard Structured Query Language (SQL) which includes the following:

    a. Data Definition Language (DDL) statements

    b. Data Manipulation Language (DML) statements

    c. Transaction control statements

    d. Session control statements

    e. System control statements

    f. Embedded SQL statements

6. Database Maintenance: The database maintenance system shall be capable of maintaining configuration control (i.e., keep track of changes and compare versions of the database). Database maintenance software shall be provided to allow modification of designated database fields. Database documentation shall be provided to enable the updating or regeneration of the database tables when inputs are changed and added and as programs are modified or added.

7. Archival Viewing: The database shall provide an archive capability that provides "near time" retrieval of archived data. The data held within the "operational" portion of the database shall include a minimum of 7 days of operational data. The Contractor shall propose, and submit for approval, the maximum amount of operational data to be stored for real time access that will not impact the efficiency of the database. In addition to real-time (daily) operational data, the database shall provide the ability to generate real-time reports for operational data for a minimum of thirty-six (36) months.

8. The database shall include the functionality and capability to allow the authorized user to view or report on historical data. If the user wishes to view or report on data which has been archived, an automated mechanism shall be provided to have the requested data put online. The methodology for providing this functionality must be approved by the Engineer prior to implementation.

2.28   SYSTEM CONFIGURATION

A. Security

1. Authorized users shall log into the system using a unique user name and password. Depending on assigned user access privileges, the user shall be either granted or denied access to individual applications. In no case shall any user identified via user name and password as an airline employee or any other user without proper authorization gain access to any other airline's data, other than that pertaining to their own flights and baggage.   Data that can be viewed at the user's workstation pertaining to data by airlines other than the user's airline shall be limited to data that can be viewed on public displays.

2. The System Administrator shall be able to add, delete, set, and change user privileges and access authorization via a GUI. System security parameters shall be configurable by the System Administrator.

3. Workstations shall have an "inactivity timeout period" such that if any workstation is determined to be inactive by having no input/output performed at that workstation for the defined timeout period, that workstation shall be automatically logged out of the application.

4. The timeout feature shall be turned on or off by the System Administrator. The timeout period shall be configurable by the System Administrator.

5. The occurrence of an inactivity timeout occurring as described above shall be recorded in the fault log, showing date, time, workstation identifier, and the user name of the user who was logged in at the time when the inactivity timeout occurred.

6. Systems shall prevent a user name from being logged in more than one time concurrently.

7. Systems shall provide an audit trail of all transactions. The audit trail shall track on a per user basis. The audit trail file shall indicate any changes that occurred to applications configuration, data structure, or database fields/records, and shall contain the date and time of the change, the user identification of the user who made the change, and the details of the change.

8. Systems shall provide automated tracking of the audit trail database, and shall alert the System Administrator when this file has exceeded pre-determined size restrictions. The System Administrator shall then have the ability to archive this database, along with the ability to restore it for reporting purposes. The system shall also include the option of a "rolling window". In this case, the audit trail database shall use a rolling window with a System Administrator configurable window (i.e., after defined period of time oldest records are automatically dumped).

9. If remote access is required for system administration, a security feature such as secure VPN encryption shall be used.

B. Availability Requirements

1. System Availability:

   a. At any given time, the overall Systems shall be considered unavailable if two (2) percent or more of the end devices are non-operational, not fully functional, or do not meet response time criteria.

   b. Software and system devices shall execute, without degradation, at the scheduled periods and response times for the systems to be considered available.

   c. The systems shall operate as specified twenty-four (24) hours per day, seven 7 days per week.

   d. Availability of the overall Systems shall be at least 99.9999 percent.

2. Device Availability:

   a. A system server and PC shall be considered available only if all components are operating and fully functional.

   b. A peripheral device shall be considered unavailable if it cannot be placed on-line and perform its intended function(s).

    c. Besides scheduled downtime, as identified below, individual device availability shall exceed 99.80 percent (17 hours 30 minute maximum downtime per year).

3. Scheduled Downtime:

    a. Downtime to update the computer operating system or repair a component shall be acceptable reasons for downtime, but at no time shall more than 5 percent of the system be non-operational.

    b. Scheduled downtime shall be anticipated to be between 12:01am and 3:59am, or during CMJV and PMT approved hours and must be coordinated with the CMJV and PMT a minimum of 48 hours in advance of any work being performed.

    c. If the operating system of the servers requires maintenance or updates, or if the servers require system maintenance, each server shall be brought down individually to be updated/maintained, such that at no time is more than one server down at the same time.

    d. If the operating system of the end device computer requires maintenance or updates, or if the end device computers require system maintenance, the end device that requires the maintenance shall be brought down during non-peak hours of operation.

    e. It shall be acceptable to perform maintenance/updates on an end device computer system during other than non-peak hours if the particular end device is non-functional without having the maintenance or updates performed.

C. Performance Requirements

1. The performance requirements in this section are for system design and testing and not service response time.

2. Capacity: Systems shall be designed to support the operational, functional, and performance requirements, specified herein, for a minimum of 400 flight operations per hour and 40 different airlines with a total of 200 users simultaneously conducting 60 user operations per minute with a minimum of 750 end devices being updated.

3. Response time criteria shall be met under maximum capacity conditions as defined above.

4. External System Interface: The total additional delay for a transaction between a Systems workstation to an external system shall not exceed 1.5 seconds for 95 percent of all transactions. The remaining 5 percent of delays shall not exceed 3.0 seconds.

5. Database Transactions: For 95 percent of database transactions, there shall be no more than a 0.5 second delay between the time that a user selects an action and the system responds in some way that the input has been received. The remaining 5 percent of transactions shall not exceed 1.0 second.

6. Peripheral Command: For 95 percent of peripheral commands, there shall be no more than a 3.0 second delay between the time that a user selects an action and the associated peripheral responds to the request. The remaining 5 percent of command responses shall not exceed 5.0 seconds.

7. Peripheral Configuration: For 95 percent of peripheral configuration changes, there shall be no more than a 6.0 second delay between the time that a user selects an action and the

associated peripheral responds to the request. The remaining 5 percent of peripheral configuration changes shall not exceed 10.0 seconds.

8. Display: For 95 percent of dynamic display device changes, there shall be no more than a 30.0 second delay between the time that a user inputs a database change and the affected display devices reflect the change. The remaining 5 percent of transactions shall not exceed 45.0 seconds.

D. System Management

1. The devices connected to the network shall be SNMP manageable. A positive relationship (e.g., system heart beat) shall exist between the system devices and the controlling server(s) at all times.

2. Managed system failures shall include, but not be limited to, PC failure, display device failure, application failure (server and local applications), network connectivity failure, and server failure. Server failure shall include hardware, software, network, and power based failure.

3. System failures shall be viewable at a central control point (i.e., the system administrator's workstation). A failure shall initiate an alarm and add a failure record to the failure database table. The system administrator shall receive a warning message on the System Administrator workstation, notifying them of the failure. The system shall provide e-mail, pager, and text messaging notification. The Contractor is responsible for providing all hardware, software, and WAN/PSTN access necessary to support the notification functions.

4. End user devices shall have remote administration and monitoring capabilities. This capability shall allow the specific machine to be remotely configured and to provide a status report to the management system. Data included in the reporting capabilities shall include: data pertaining to the machine's memory, storage devices, network connections, and general health of the machine.

2.29 DATA NETWORK

A. Refer to Section 27 21 00 for Network Requirements.

2.30 LABELS

A. Shall meet the legibility, defacement, exposure and adhesion requirements of UL 969.

B. Shall be pre-printed or laser printed type.

C. Where used for cable marking, a label with a vinyl substrate and white printing area and a clear "tail" that self laminates the printed area when wrapped around the cable shall be provided. The label color shall be different than that of the cable to which it is attached.

D. Where insert type labels are used, provide clear plastic cover over label.

E. Acceptable Manufacturers:

a. **W.H. Brady**

b. **Ideal**

c. **Panduit**

d. **Other equal**

PART 3 – EXECUTION

3.01 GENERAL

A. Contractor shall coordinate installation with LAWA, Airline Tenants and TASS system to plan for start-up and testing as required to meeting operations.

B. Contractor shall acquire and apply LAWA asset tags to each major equipment item. A list of asset tag numbers and locations shall be submitted for review by the systems manager, LAWA and the design team.

C. Determine that area is finished as required for equipment installation. SUS equipment shall not be installed until the Gate counter positions and equipment rooms are clean environments free of dust and debris, and shall not be exposed to construction activity in the immediate area. Contractor to protect or remove and reinstall equipment that will be exposed to dust and debris that is the result of subsequent construction.
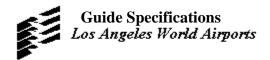
3.02 EXAMINATION

A. The Contractor shall perform a detailed inspection of the site prior to submitting any technical data for approval.

B. The Contractor shall verify that the proposed equipment and methods of installation are compatible with the existing conditions and prepare a corresponding written report of their findings.

C. LAWA shall be notified in writing if modifications of the existing building are required in order to accommodate the new equipment. These modifications shall be made only upon receiving written approval from LAWA.

D. Submit installation drawings for LAWA review and approval.

3.03 PREPARATION

3.04 PHASES OF IMPLEMENTATION

A. Provide a consolidated and integrated schedule.

3.05   INSTALLATION, PROGRAMMING AND INTEGRATION

A. Programming

1. Each SUS Gate workstation and associated peripheral equipment set shall be programmed to provide full support of departure operations tasks to each of the airlines using the LAWA Common Use System.

2. Each SUS workstation and peripheral equipment shall be programmed for use by each of Common Use System airline user.

3. Each Gate SUS Workstation shall have a VoIP handset associated with it. The SUS workstations shall be provisioned to activate a pre-configured telephone user profile for the VoIP telephone handset upon valid sign on of a SUS workstation user. Coordinate this interface between the VoIP and CUTE system with the System Manager, telephone system and network providers as required to support each airline log on to SUS workstations.

B. Integration

1. Each new SUS Gate Workstation and associated peripheral equipment set shall be integrated into the existing LAWA TASS.

2. Integration plans and testing shall be witnessed and approved by the Systems Manager as defined in Section 27 26 26.

C. Functionality

1. Each SUS workstation shall be installed and programmed as IATA RP 1797 CUTE/CUPPS compliant and be fully functional to meet airline operational requirements.

D. Printer Adjustments

1. Each Printer shall be adjusted to correct boarding pass coupon production and provisioned with Pectabs suitable for each airline user operations.

3.06   FIELD / SITE QUALITY CONTROL

A. Equipment Set Testing, Commissioning and Demonstration Requirements

1. Each SUS workstation and associated peripheral equipment set shall be demonstrated and fully tested to meet basic functionality and airline operational requirements.

2. Each SUS workstation and associated peripheral equipment set shall be commissioned using SITA certified commissioning program.

B. Final Testing

1. Develop a comprehensive Common Use Equipment Test Plan and submit to the Systems Manager for review and approval.

2. Conduct testing with Airline, LAWA and Design Team representatives present.

3. Rework all failed tests until acceptable test results are achieved.

4. All workstations and associated peripheral equipment set shall be tested to meet operational requirements for each airline and to allow any airline to operate at any Gate.

5. Test and demonstrate each workstation's integration with the existing LAWA Systems and each participating airline application.

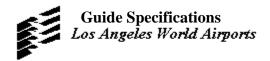6. Submit Test Reports initialed by Airline and LAWA witnesses.

C. Termination

1. Performance verification test shall be terminated by the Design Consultant when:

   a) Individual components, subsystems, or the integrated system fail to perform as specified.

   b) It is determined that system is missing components or installation is not complete.

2. Upon termination, corrective work shall be performed and performance verification test rescheduled with the Design Consultant.

3. Retesting shall be performed by Contractor at no additional expense.

4. Contractor shall continue to perform corrective actions and retest until system passes all tests to satisfaction of the Design Consultant.

3.07   SYSTEM STARTUP

A. The Contractor shall not apply power to the system until after:

1. System and components have been installed and inspected in accordance with the manufacturer's installation instructions.

2. A visual inspection of the system components has been conducted to ensure that defective equipment items have not been installed and that there are no loose connections.

3. System wiring has been tested and verified as correctly connected as indicated.

4. All system grounding and transient protection systems have been verified as properly installed and connected, as indicated.

5. Power supplies to be connected to the system and equipment have been verified as the correct voltage, phasing, and frequency as indicated.

B. Satisfaction of the above requirements shall not relieve the Contractor of responsibility for incorrect installations, defective equipment items, or collateral damage as a result of Contractor work/equipment.

3.08   IDENTIFICATION AND LABELING

A. All cables and patch cables shall have a permanent label attached at both ends.

B. The Contractor shall confirm specific labeling requirements with the Design Consultant prior to cable installation or termination.

C. All indoor cable and patch cable labels shall be pre-printed using BRADY TLS 2200 printer or equivalent and shall be placed loose on the patch cable near the connector end without heat shrinking labels. Labels shall use a three line format with the origination patch panel and port on the first line, the destination patch panel and port on the second line and the system or other descriptive information on the third line.

3.09   COMPUTERIZED MAINTENANCE MANAGEMENT SYSTEM

A. Information regarding all equipment including model, nomenclature, serial number, function, location, recommended preventative maintenance schedule, Quality Assurance Inspections and other pertinent data will be stored in the LAWA CMMS database. Contractor shall include in their Bid the cost for collecting and inputting this data for all systems and equipment provided by this Contract into this database.

3.10   CLOSE-OUT ACTIVITIES AND ACCEPTANCE

A. Completion of the installation, in-progress and final inspections, receipt of the test and as-built documentation including data input of all installed cables in the LAWA management system and successful performance of the Common Use Systems for a period of 60 days will constitute acceptance of the System(s).

B. Training:

1. Conduct training for LAWA CUTE/CUPPS administration. This training shall be a SITA CUTE refresher course developed for 8 LAWA staff members over a 4 hour period.

2. A training syllabus shall be developed and submitted for approval, then once approved, each student shall be provided with a handout copy of the syllabus.

3. Conduct airline user training on workstation, CUTE applications and peripheral equipment sets. This training shall be a 1 hour, hands on, user training session offer to all participating airlines. Training Classes shall be scheduled as 1 hour courses with an AM class and a PM class to facilitate airline and LAWA shift schedules.

4. Develop and submit 2 reproducible and 2 electronic files of troubleshooting guides/training manuals for LAWA and Airline Personnel. These troubleshooting guides/training manuals shall address common PC and peripherals troubleshooting, typical use and contact information to escalate operational issues.

3.11   MAINTENANCE

END OF SECTION 27 42 20