INTEGRATED TERMINAL WEATHER SYSTEM (ITWS) TELECOMMUNICATIONS PROGRAM PLAN, VER. 1

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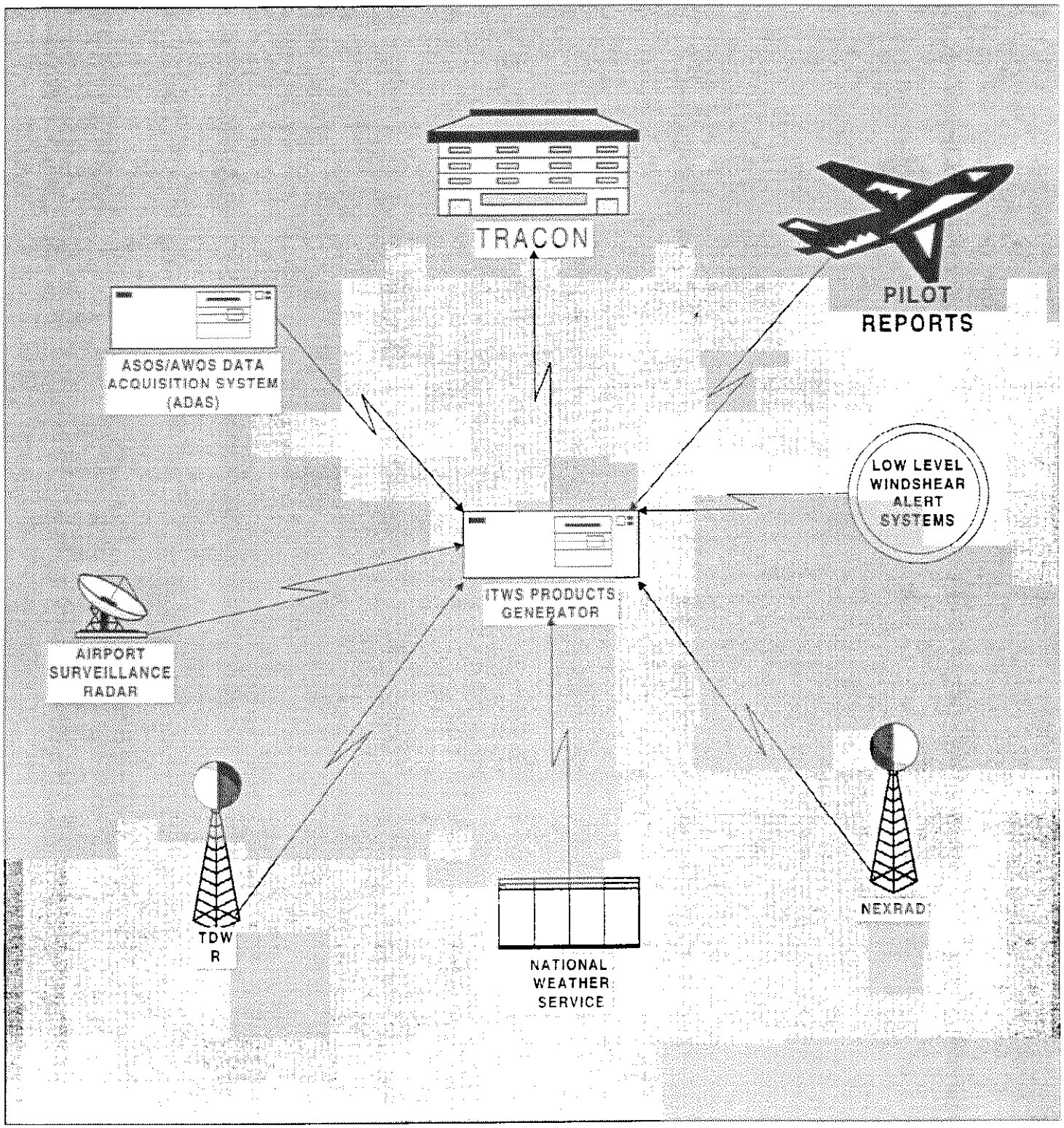

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Executive Summary

The Integrated Terminal Weather Information System (ITWS) is a development program initiated by the Federal Aviation Administration (FAA) to produce a fully automated method for integrating all terminal weather information into a single device. Improving air safety, increasing efficiency and capacity of terminal area aviation operations are key FAA goals for this system. It will acquire data from sensors located at FAA and National Weather Service (NWS) facilities as well as aboard aircraft in-flight. ITWS will produce and disseminate detailed, aviation-oriented weather products and severe weather alerts which are immediately usable. These data will be provided to Air Traffic Control personnel directly without further meteorological interpretation to ensure timeliness. The current terminal area weather conditions and short-term (0 to 30 minutes) predictions of significant weather phenomena provided by this system are of primary importance to Tower/TRACON ATC personnel comprehension of local weather phenomena.

This Telecommunications Program Plan (TPP) provides the details for telecommunications supporting the ITWS. The plan is being developed in two versions. This version, TPP Version 1 (TPP V1.0) identifies the functional telecommunications requirements for ITWS (with specific requirements identified in Appendix A). Once coordinated, these requirements will be designated the telecommunications baseline and placed under the configuration management process noted in Appendix B. These functional requirements include providing ITWS related telecommunications with the following:

- The WSR-88D Weather Radar (known as NEXRAD)
- Airport Surveillance Radar (ASR)—Weather Channel
- Terminal Doppler Weather Radar (TDWR)
- Low Level Wind Shear Alert System III (LLWAS III) incorporated with TDWR base data,
- Automated Surface Observation System (ASOS), Automated Weather Observation System (AWOS)
- National Lightning Detection Network (NLDN) sensor readings incorporated to form AWOS Data Acquisition System (ADAS) products
- The FAA Bulk Weather Telecommunications Gateway (FBWTG) outputs that include Meteorological Data Collection and Reporting System (MDCRS), Eta (Puerto Rico) and Rapid Update Cycle (RUC) weather files

Version 2 of this TPP (TPP V2.0) is being developed in conjunction with TPP V1.0. TPP V2.0 will document an analysis of alternatives which will determine the best telecommunications design to meet the functional architecture. Next it will set forth the installation and transition activities to implement that design. Supporting documentation will be provided including schedule, cost, interface references and details.

Additionally, this TPP (TPP V1.0 & 2.0) illustrates the supporting functional architecture that the telecommunications design must meet (with site-by-site functional architectures in Appendix C). The telecommunications architecture is based on the expected use of a least cost, high reliability mix of FAA telecommunications alternatives. Some change may occur from version 1 to version 2 as new information is developed.

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1.0 INTRODUCTION

The Integrated Terminal Weather System (ITWS) Telecommunications Program Plan (TPP) describes interfacility telecommunications required to accomplish the ITWS mission. Program planning is set forth which integrates en route and terminal telecommunications resources required for ITWS weather product generation and dissemination.

1.1 Scope

This Plan applies to all activities that provide for or interact with telecommunications services. It addresses ITWS and designated interfacility telecommunications systems that support it. This plan defines ITWS Program functional telecommunications requirements, and derives a supporting telecommunications architecture. Subsequent to approval of TPP V1 requirements, it will show the implementing telecommunications design.

From a facility viewpoint, ITWS telecommunications interconnection occurs at the Terminal Radar Approach Control (TRACON facility), related Air Traffic Control Towers (ATCTs) and Air Route Traffic Control Centers (ARTCCs). Relevant interconnections also apply to systems and locations that interact with ITWS via intermediate telecommunications support(e.g., ASOS/AWOS Data Acquisition System [ADAS])

Unless explicitly specified, implementation of any intrafacility telecommunications is the responsibility of the ITWS Program Manager(PM). In certain instances, this Plan also shows intrafacility interconnectivities or functional requirements. This only occurs with the concurrence and at the direction of the ITWS PM.

For the purpose of this Plan, en route data input includes the WSR-88D (known as the Next Generation Weather Radar (NEXRAD)) and ADAS products. Site-specific segments of information from the National Weather Service (NWS) include Rapid Update Cycle (RUC) data, Eta products for Puerto Rico only, and Meteorological Data Collection and Reporting Service(MDCRS) position reports. Terminal data input includes Terminal Doppler Weather Radar (TDWR) base band and products, Airport Surveillance Radar (ASR)-9 weather channel and Low-Level Wind Shear Alert (LLWAS) III products.

The ITWS nationwide telecommunications topology includes system hardware and software located in 34 TRACON facilities and 3 support sites as shown in Table 1-1.

Figure 1.1 shows the telecommunications relationships of these products and the defined boundary between interfacility and intrafacility communications.

CENTER TYPE	REGION	ITWS PRODUCT GENERATOR SITE
Operational	Western Pacific (AWP)	Phoenix (P50)
	Eastern (AEA)	Dulles (IAD), Pittsburgh (PIT) New York (N90) Philadelphia (PHL)
	Northwest Mountain (ANM)	Denver (D84) Salt Lake City (S56)
	Southwest (ASW)	Dallas/Forth Worth (DFW) New Orleans (MSY) Oklahoma City (OKC) Houston (IAH) Tulsa (TUL)
	Central (ACE)	Kansas City (MCI) St. Louis (T75) Wichita (ICT)
	New England (ANE)	Boston (A90)
	Great Lakes (AGL)	Chicago (C90) Cleveland (CLE) Columbus (CMH) Dayton (DAY) Detroit (DTW) Indianapolis (IND) Minneapolis (M98)
	Southern (ASO)	Orlando (MCO) Atlanta (ATL) Charlotte (CLT) Cincinnati (CVG) San Juan (SJU) Miami (MIA) Louisville (SDF) Memphis (MEM) Nashville (BNA) Raleigh/Durham (RDU) West Palm Beach (PBI)
Support	Eastern (AEA)	FAA Technical Center (FAATC)
	Southwest (ASW)	FAA Training Center (Aeronautical Center) Program Support Facility (PSF)

Table 1-1. Planned ITWS Implementations

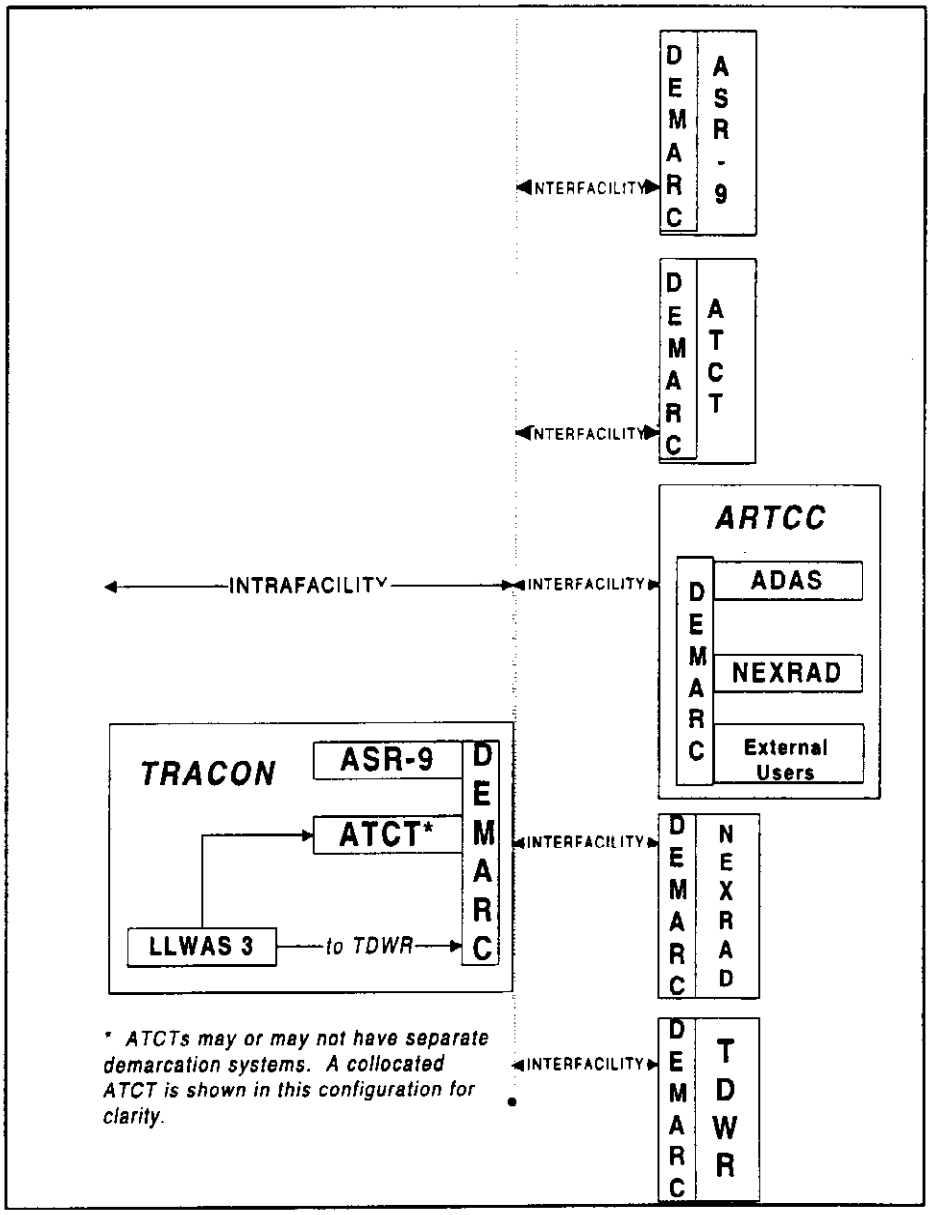


Figure 1-1 Telecommunications Systems Relationships

1.2 Background

Identification of weather impacts specific to approach and departure corridors, corner posts, runways, and airport surface will enable more efficient coordination of routing strategies. Air Traffic Control(ATC) personnel will be able to anticipate, rather than just react to, these weather impacts. ATC personnel will be better able to coordinate the movement of traffic through alternate arrival and departure routes. This improvement will result in overall increases in capacity. The ability to anticipate impacts such as the movement of significant weather into or out of the area, and to select optimal routing or strategies prior to aircraft arrival in the area will result in savings of time and fuel.

1.3 Document Organization

The Plan is organized into six sections and six supporting appendices.

1.3.1 Section One introduces the Plan and provides to the reader scope, background, objectives and assumptions.

1.3.2 Section Two documents the operational interfacility telecommunications Requirements.

1.3.3 Section Three describes the high-level functional and site-specific architectures required for full operational capability.

1.3.4 Section Four describes the FAA-owned and FAA leased telecommunications resources that may be used to support ITWS.

1.3.5 Section Five describes the strategy for implementing the telecommunications resources.

1.3.6 There are six appendices:

1.3.6.1	Appendix A	ITWS functional telecommunications requirements
1.3.6.2	Appendix B	configuration management of ITWS functional telecommunications requirements
1.3.6.3	Appendix C	ITWS site-specific functional architectures
1.3.6.4	Appendix D	specific telecommunications interfaces for systems that support ITWS
1.3.6.5	Appendix E	ITWS telecommunications schedule
1.3.6.6	Appendix F	Abbreviations and Acronyms

1.4 Telecommunications Program Planning Goals

This Plan is intended to support the program planning goals for telecommunications as follows:

1.4.1 Identify, validate, and document the interfacility telecommunications requirements.

1.4.2 Provide the basis for detailed telecommunications systems planning and implementation.

1.4.3 Promote systems interoperability to improve telecommunications cost effectiveness.

1.4.4 Incorporate telecommunications diversity in accordance with FAA Order 6000.36A.

1.4.5 Provide transparent commissioning of systems with respect to the existing telecommunications architecture.

1.4.6 Implement the telecommunications network within the established time frame and budget.

1.5 Telecommunications Strategies

In order to provide the most effective and efficient telecommunications, the following strategies will be pursued in the Plan:

1.5.1 Identify current and planned telecommunications services by implementing a consistent, unified requirements database and applying configuration management procedures.

1.5.2 Maximize the use of available digital transmission capabilities to improve the cost effectiveness of the telecommunications system.

1.5.3 Support the transparent operational transition from the current to the new facilities by operating facilities concurrently during the planned shakedown/transition period and ensuring the transition of all leased or owned telecommunications services and systems.

1.5.4 operational and technical alternatives and selecting an operationally suitable and resource-feasible design.

1.5.5 Ensure that the telecommunications network is implemented on schedule and within budget by applying proven program management processes.

1.6 Assumptions

This Plan is based on the following assumptions:

1.6.1 The FAA new acquisition procedures will be applied to the ITWS program.

1.6.2 The ITWS Telecommunications Program Plan and its implementations are based on validated telecommunications requirements in the ITWS baseline (Appendix A). This baseline will be placed under configuration management (Appendix B). The telecommunications program planning team will assess changes to this baseline in terms of performance, cost, and schedule risk and impact.

1.6.3 Management capabilities. The NAS Infrastructure Management System (NIMS) is a possible future enhancement to the NAS (including ITWS). Funding improvements to network management is within the purview of the ITWS Program Office.

1.6.4 The LINCS Digital Direct Connect (DDC) hardware platform will be used for Point-to-point connectivity, as required, for site-specific implementations.

1.6.5 ITWS will have an initial deployment of one NAS Filter Unit (NFU) that will be located at the Kansas City (MCI) TRACON. Two additional NFUs will be commissioned at locations based on contractual requirements.

1.6.6 The telecommunications architecture and planning are based on currently available technology and assets. The objective architecture will provide the flexibility to incorporate other technologies, with associated funding identified, after ITWS is operational.

1.7 References

NAS and FAA Directives	
NAS-SR-1000	National Airspace System (NAS) System Requirements, May 1993
NAS-SS-1000	National Airspace System (NAS) System Specification, December 1986, including SCN 25, September 8, 1994
NAS-DD-1000D	National Airspace System (NAS) Design Document, July 1993
FAA Order 1200.22B	Use of National Airspace System (NAS) Computer and Radar Data or Equipment by Outside Interests
FAA Order 1800.8F	NAS Configuration Management, May 5, 1991
FAA Order 1810.2	Independent Operational Test and Evaluation for Major Acquisition, June 20, 1983
FAA Order 1810.4B	FAA NAS Test & Evaluation Policy, October 1992
FAA Order 1830.2B	Telecommunications Standards Selection Policy, August 4, 1987
FAA Order 1830.3A	Telecommunications Management and Operations Policy September 21, 1992
FAA Order 1830.6A	Telecommunications Asset Management, September 17, 1996
FAA Order 2500.8A	Funding Criteria for Operations, Facilities and Engineering (F&E), and Research, Engineering and Development (R,E, & D) April, 9, 1993
FAA Order 6000.22	Maintenance of Analog Lines, August 2, 1991
FAA Order 6000.36A	Communications Diversity, November 14, 1995
FAA Order 6030.45A	Facility Reference Data File, December 30, 1992
FAA Order 6000.47	Maintenance of Digital Transmission Channels, October 18, 1993
FAA Order 6510.4A	Radio Communications Requirements For Air Traffic Control, June 19, 1980
FAA-STD-021A, Chg. 1	Configuration Management (Contractor Requirements), March 6, 1990
NAS-IR-44010001	Transmission Equipment: Digital Interface
NAS-IR-63002514	Airport Traffic Control Tower to Integrated Terminal Weather System (ATCT/TRACON-ITWS)
NAS-IR-61002514	Air Route Traffic Control Center to Integrated Terminal Weather System (ARTCC-ITWS)
NAS-IR-25082514	AWOS Data Acquisition System to the Integrated Terminal Weather System (ADAS/ITWS)
NAS-IC-43020001	National Airspace Data Interchange Network (NADIN) Packet Switched Network (PSN) X.25 Packet Mode Users
NAS-IR-90029414	National Weather Service Telecommunications Gateway (NWSTG) to Federal Aviation Administration Bulk Weather Telecommunications Gateway (FBWTG)
Other FAA Documents	
FAA Telecommunications Strategic Plan, October 1994	
Future FAA Telecommunications Plan, April 1997	
Current FAA Telecommunications, 1997	
Functional Specification for Leased Interfacility NAS Communications March 15, 1990 as amended	

Table 1 - National Airspace System (NAS Documents)

2.0 Telecommunications Requirements

This plan identifies the interfacility telecommunications systems and services required to support the transition, commissioning and full operation of ITWS. Requirements imposed upon telecommunications include three specific aspects of the ITWS. These are (1) function, (2) performance, and (3) geography. Telecommunications requirements are identified functionally in terms of the services they provide to ITWS. Performance is identified according to the derived requirements as an integrated element of ITWS service delivery. Geographic requirements are identified by the locations where services are required.

ITWS provides a computer-generated display that integrates a large number of radar and weather sensor sources with NWS grid data to provide a detailed picture of local airport weather conditions. Four different radar sources, three weather sensor sources and the NWS provide the inputs to the ITWS system. The output data information goes to the TRACON, the ATCT, and the ARTCC and individual external users.

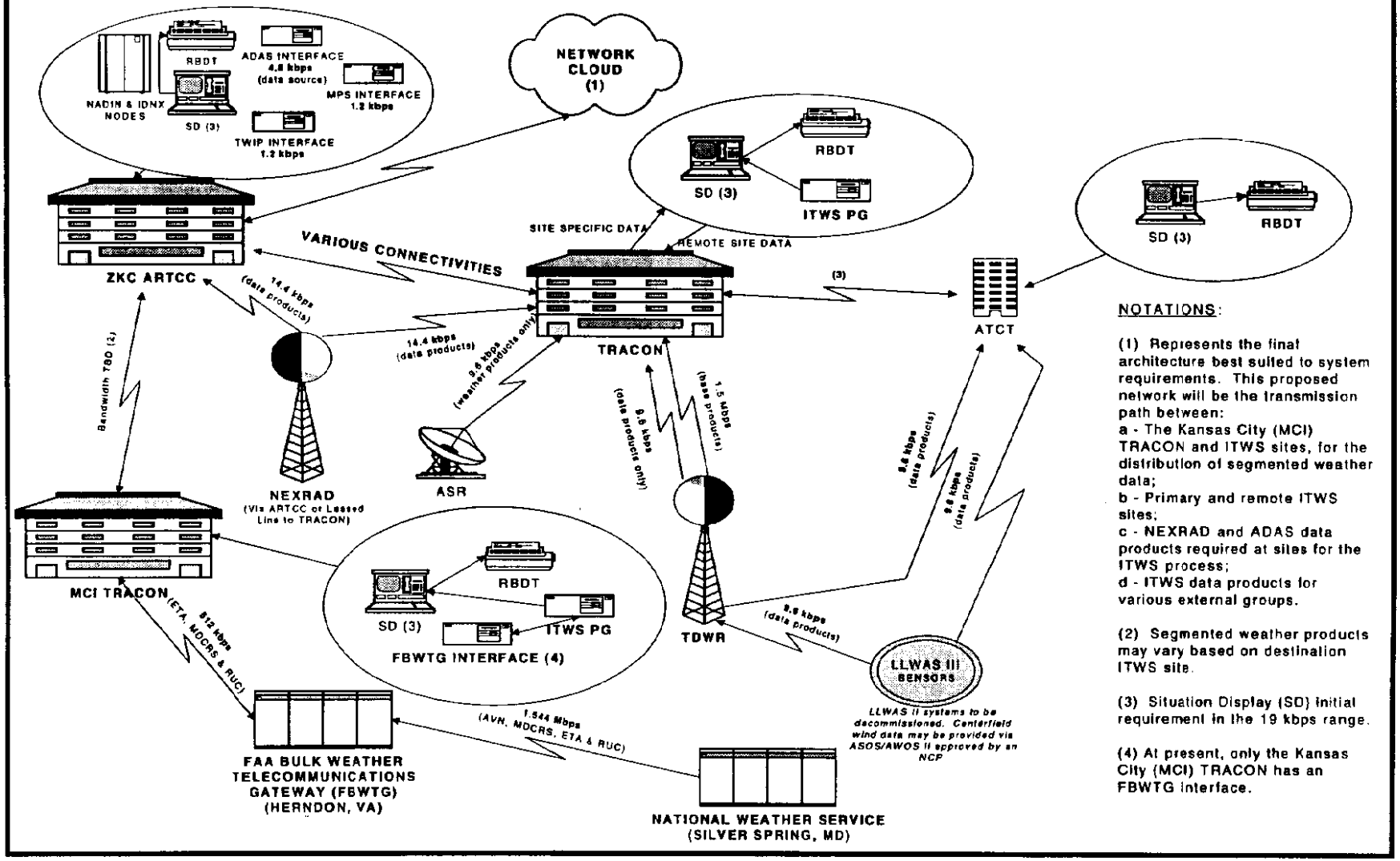
Figure 2.1 depicts the system arrangements and approximate capacities of the fielded ITWS architecture. Appendix A provides complete details of the telecommunications requirements needed to provide ITWS the service support it requires to carry out its function for NAS operations. These include circuit requirements, endpoints, facility, type of service, and other details needed for implementation planning and circuit provisioning. Appendix A will be placed under configuration management through the process described in Appendix B once validated and baselined.

NAS requirements for weather operations and related weather data communications are indicated in the NAS Architecture 3.0 and set forth in the NAS-SR-1000 as directly serving (or supporting) the FAA Air Traffic Control and Flight Planning operations Specifically, these NAS system direct requirements break down as follows:

- 3.1 FLIGHT PLANNING
  - 3.1.1 Weather Information (strategic)
- 3.2 AIRSPACE MANAGEMENT
  - 3.2.6 Weather Avoidance
- 3.3 MONITORING
  - 3.3.3 Weather Advisories
- 3.6 COMMUNICATIONS
  - 3.6.1 Air-ground Communications
  - 3.6.2 Ground-Ground Communications Connectivity
  - 3.6.3 Ground-Ground Communications Capabilities

The requirements set forth for conducting this business has led to a number of operational weather systems and services propagating throughout NAS Operations. Communications links required to satisfy the need for timely terminal area weather information have been in place for many years.

Figure 2.1; Integrated Terminal Weather System Functional Telecommunications Architecture



2.1 Telecommunications Requirements Phasing

The ITWS interfacility telecommunications requirements are derived from the operational requirements identified in the present day (current to 2000) and full operational capability (2000 to 2002) system architectures. Figure 2.2, ITWS System Deployment Schedule, relates the proposed ITWS implementation phases to the major program milestones.

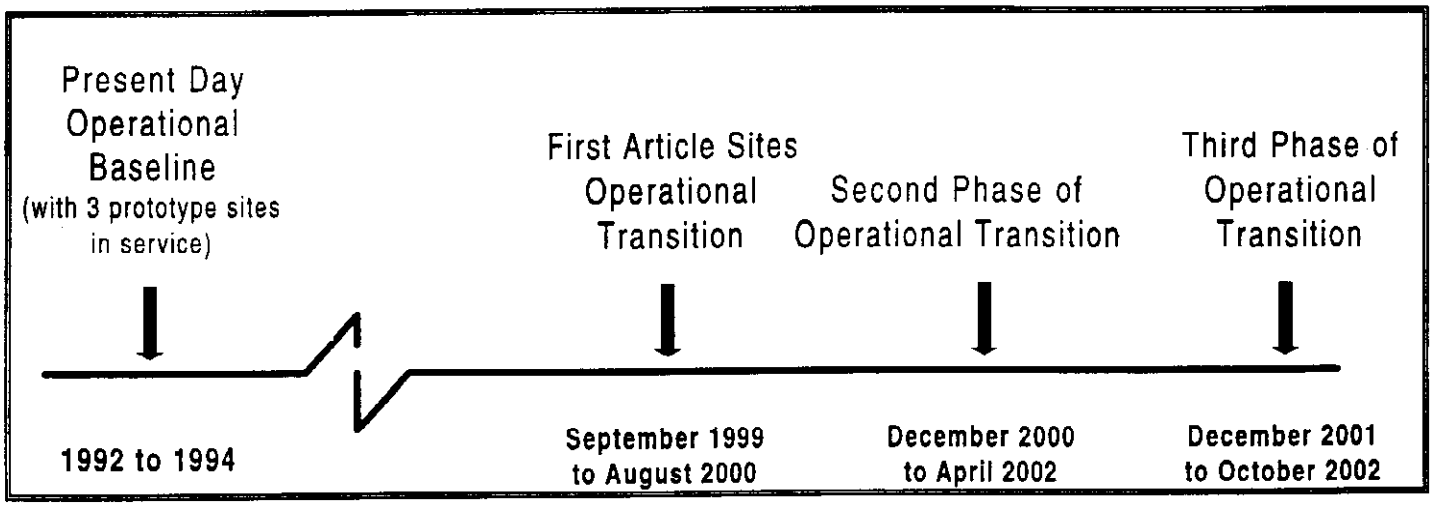


Figure 2.2 ITWS System Deployment Schedule

The ITWS Transition and Implementation Plan details the operational transition to ITWS Full Operational Capability. Table 2.1, ITWS Site Deployment Schedule, summarizes the three installation phases involved in this nationwide effort. The table is based on the Program Office's implementation schedule for system hardware and software at designated ARTCCs, TRACONs, and ACTCs.

TRANSITION PHASE	RESULT	DATE
Prototype Sites	Memphis, Orlando, and Dallas/Fort Worth prototype sites installed	1992 to 1994
First Article Sites	FAA Technical Center, Houston, Kansas City, and Program Support Facility sites installed	September 1999 to August 2000
Second Phase of Operational Transition	Memphis, Phoenix, Charlotte, New York, Dallas, Cincinnati, Atlanta, FAA Academy, New Orleans, Miami, West Palm Beach, St. Louis, Orlando, Nashville, Indianapolis, Philadelphia, Dulles/Potomac, Denver, Boston, Minneapolis, Pittsburgh, and Salt Lake City sites installed	December 2000 to April 2002
Third Phase of Operational Transition	Cleveland, Tulsa, Chicago, Raleigh-Durham, Wichita, Detroit, Columbus, San Juan, Louisville, Oklahoma City, and Dayton sites installed	December 2001 to October 2002

Table 2.1 ITWS Site Deployment Schedule

2.1.1 Basic Schedule

2.1.1.1 First Article Locations

Figure 2.3 depicts the geographical locations where ITWS systems will reside at build-out and approximately when they will become operational. The list of these locations is shown in table 1-1. ITWS systems will be installed at these locations. These systems will undergo integration, operation and shakedown tests from mid-November, 1999 through January, 2000. From January, 2000 through July, 2000 Operational Test and Evaluation (OT&E) will be conducted on these systems. The results of this First Article work will be presented as part of the ITWS In-Service Decision (ISD) activity.

2.1.1.2 Follow-on Requirements

Assuming successful completion of the First Article Testing and supporting ISD, two procurement decisions must be made to deploy the ITWS system. The first decision will cover 22 sites to be installed between December 2000 and April 2002. The second decision will authorize 11 sites to be installed between December 2001 and October 2002. In all, 37 ITWS sites, including the First Article sites, will be deployed.

2.2. Current Telecommunications Requirements For Terminal Weather Activities

A number of weather sensor and radar systems are now connected to the FAA/NAS. Thus, existing systems have been providing weather sensing and reporting services to the terminal area control operation for many years. There have been several upgrades of telecommunications technology carrying this traffic over time; nevertheless, there continue to be several non-integrated weather information source systems today, as in the past. The Figure (2.4) and Table (2.2) show the functional data communications facilities now in place to support these functions. There are 13 interfaces included in Terminal Weather Telecommunications Functionality. All interfaces shown are carrying weather data except links #10 and #13 which carry voice or voice and/or data to complete the mission.

Also shown is the use of commercial weather vendors for the data in use by FAA operational personnel. The information provided in this manner is often purchased locally by operations managers to fulfill their need for relevant weather information that can be read quickly . Future developments will integrate all of these functional requirements into a weather information delivery architecture. Thus, the FAA will displace these commercial entities, save the FAA user fees. and provide less complicated telecommunications support requirements.

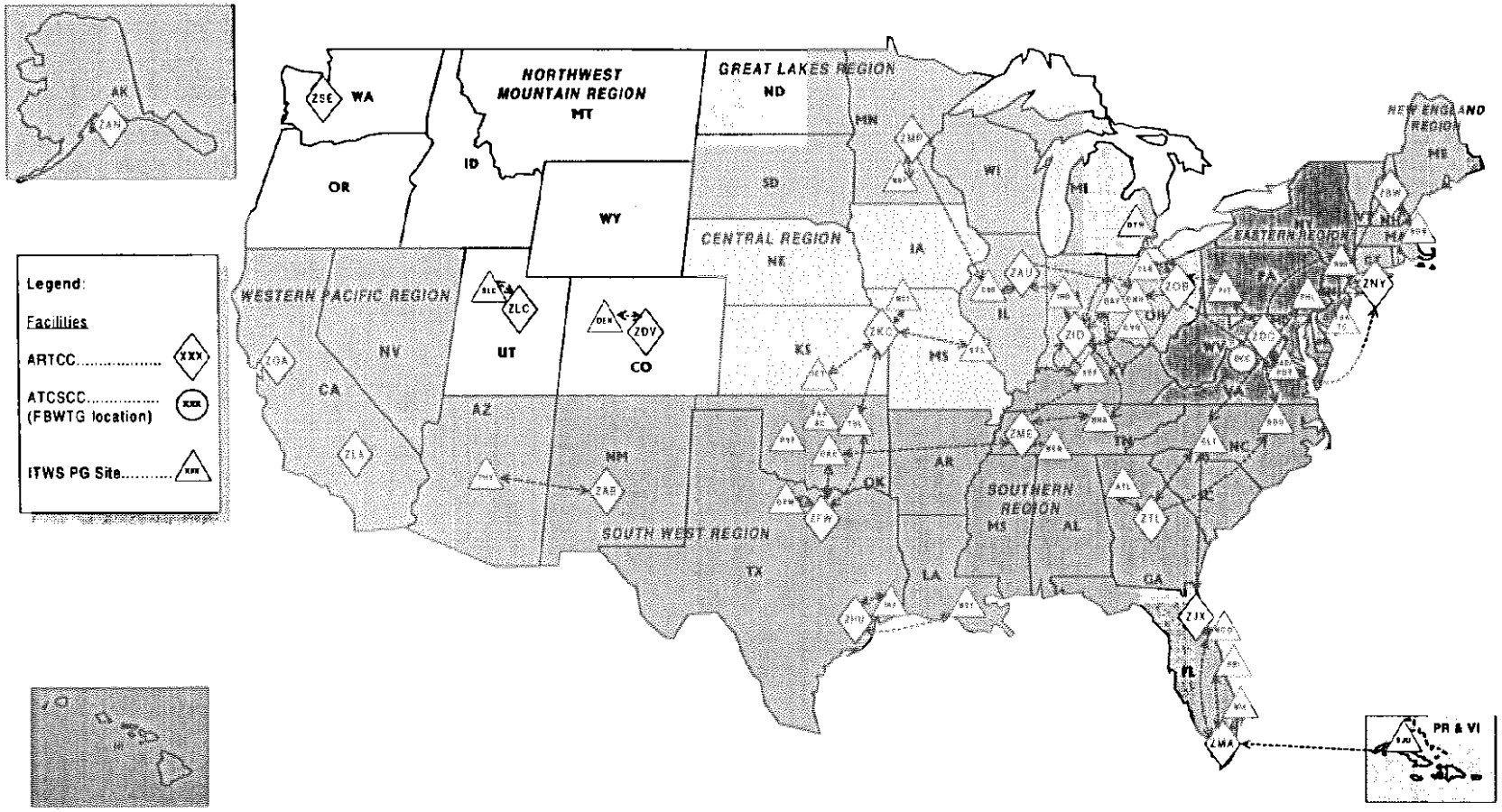


Figure 2.3; Geographic Locations Of ITWS Systems To Be Deployed

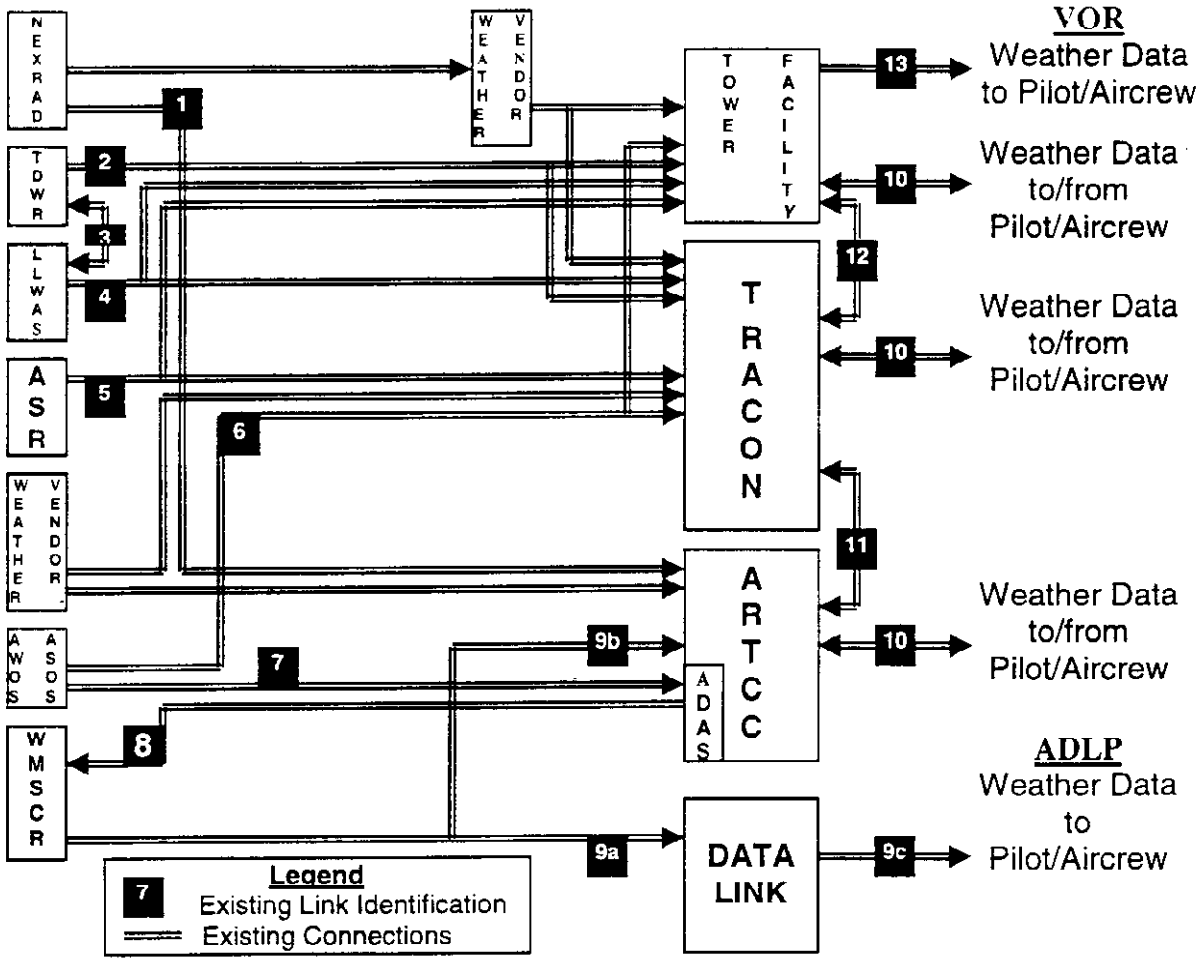


Figure 2.4; Current Telecommunications Functional Link Requirements of Existing ***Non-Integrated*** FAA terminal Weather Systems

Table 2.2; Current Terminal Related Weather Point-to-Point Telecommunications Links

#	SOURCE	DESTINATION	DATA TYPE	IRD/ICD
1	NEXRAD SITE	ARTCC (PUP)	RADAR PRODUCT	TBA
2	TDWR SITE	TRACON/TOWER (SD)	Display Data	TBA
3a	LLWAS	TDWR	Surface Wind Data	TBA
3b	TDWR	LLWAS	Com-Control Signals	TBA
4	LLWAS	TRACON Display	Surface Wind Data	TBA
5	ASR-9/11	TRACON Display	Weather Target Data	TBA
6	AWOS/ASOS	TOWER/TRACON	Local Weather Data	TBA
7	AWOS/ASOS	ARTCC/ADAS	Local Weather Data	TBA
8	ADAS	WMSCR	Local Weather Data	TBA
9a	WMSCR	ARTCC FFT	Timely Weather Data	TBA
9b	WMSCR	DATA LINK W. DB	Timely Weather Data	TBA
9c	DATA LINK	PILOT via A/C ADLP	Timely Weather Data	TBA
10a	GND facilities	Pilot & Air Crew	ATIS & UHF/VHF	TBA
10b	Pilot & A/C	GND facilities	MDCRS & Voice	TBA
11a	TRACON	ARTCC	Data & Voice	TBA
11b	ARTCC	TRACON	Data & Voice	TBA
12a	Tower	TRACON	Data & Voice	TBA
12b	TRACON	Tower	Data & Voice	TBA
13	Tower	VOR XMTR	VOX Weather Recording	TBA

2.2.1 Operational Requirements

Communications links required to satisfy NAS operational requirements listed in paragraph 2.0 for timely terminal area weather information are shown in Figure 2.4 and Table 2.2. Each source and destination shown has been in place and operating for a substantial period.

2.2.2 Existing Telecommunications Requirements

Table 2.2 illustrates the functional links that support weather-related sensing, processing, switching, and display systems. Variations of the linkage shown are installed in numerous places throughout the NAS. The majority of data carried is weather message or sensor information. In today's terms, most of the data rates are relatively low speed point-to-point circuitry serving locally defined needs for weather information.

2.2.3 Diversity Requirements

FAA Order 6000.36A, *Communications Diversity,* "establishes the national guidance to reduce vulnerability of critical National Airspace System (NAS) telecommunication services to single points of failure." The criticality of weather data, including data produced by ITWS, is determined to be Essential, as defined under FAA Order 6000.36A's "Operational Availability Requirements" guidelines. As such, essential services must have an availability of .999 and a restoration time not to exceed 10 minutes in the event of circuit outage. No diversity requirements are mandated under FAA 6000.36A but may be provided by the Program Office at its discretion.

2.3 ITWS Telecommunications Functional Requirements

The installation of ITWS into the existing terminal weather support arrangements will require several substantial changes to be made to the configuration shown in Figure 2.4. These new arrangements are in Figure 2.5 and listed in Table 2.3 for comparison with Figure 2.4 and table 2.2. Interfacility telecommunications support changes reflect the changes to the terminal weather function created by the insertion of ITWS into FAA terminal operations.

Implementation of ITWS requires 21 functional links, 15 of these will be added or altered from the previous configuration. These are listed in Table 2.3. Functional blocks added with ITWS are shaded: Changed and added links are shown in the table as the following example:

#	SOURCE	DESTINATION	DATA TYPE	IRD/ICD
1b	NEXRAD SITE	TRACON/ITWS Processor	RADAR PRODUCT	TBA

Unchanged links are shown in the table with the number blackened as in the following example:

#	SOURCE	DESTINATION	DATA TYPE	IRD/ICD
1a	NEXRAD SITE	ARTCC(PUP)	RADAR PRODUCT	TBA

Each line of the table shows the Figure number of the link, the source and destination facilities, the functional data type, and the relevant IRD/ICD that defines the interface in its new form.

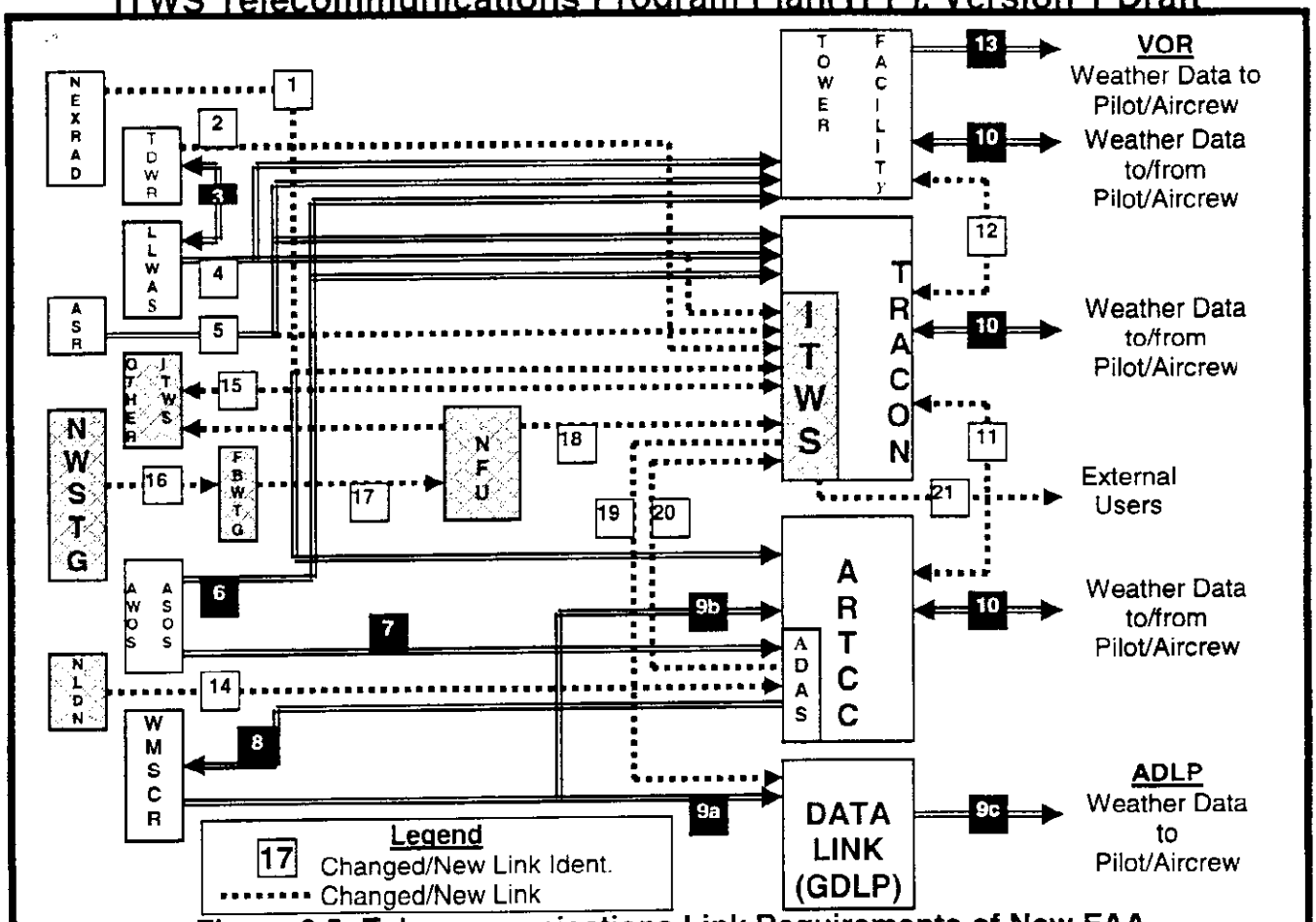


Figure 2.5; Telecommunications Link Requirements of New FAA *Integrated* Terminal Weather Systems(ITWS)

Table 2.3; New Terminal Related Weather Point-to-Point Telecommunications Links

#	SOURCE	DESTINATION	DATA TYPE	IRD/ICD
1a	NEXRAD SITE	ARTCC (PUP)	RADAR PRODUCT	TBA
1b	NEXRAD SITE	TRACON/ITWS Processor	RADAR PRODUCT	TBA
2	TDWR SITE	TRACON/ITWS Processor	RADAR BASEBAND & PRODUCTS	TBA
3a	LLWAS	TDWR	Surface Wind Data	TBA
3b	TDWR	LLWAS	Com-Control Signals	TBA
4a	LLWAS	TOWER & TRACON Display	Surface Wind Data	TBA
4b	LLWAS	TRACON/ITWS Processor	Surface Wind Data	TBA
5a	ASR-9/11	Tower & TRACON Display	Surveillance/Weather Target Data	TBA
5b	ASR-9/11	TRACON/ITWS Processor	Weather Channel Target Data	TBA
6	AWOS/ASOS	TOWER/TRACON	Local Weather Data	TBA
7	AWOS/ASOS	ARTCC/ADAS	Local Weather Data	TBA
8	ADAS	WMSCR	Local Weather Data	TBA
9a	WMSCR	ARTCC FFT	Timely Weather Data	TBA
9b	WMSCR	DATA LINK W. DB	Timely Weather Data	TBA
9c	DATA LINK	PILOT via A/C ADLP	Timely Weather Data	TBA
10a	GND facilities	Pilot & Air Crew	ATIS & UHF/VHF	TBA
10b	Pilot & A/C	GND facilities	MDCRS & Voice	TBA
11a	TRACON	ARTCC	ITWS Data + other Data & Voice	TBA
11b	ARTCC	TRACON	ITWS Data + other Data & Voice	TBA
12a	Tower	TRACON	ITWS Data + other Data & Voice	TBA
12b	TRACON	Tower	ITWS Data + other Data & Voice	TBA
13	Tower	VOR XMTR	VOX Weather Recording	TBA
14	NLDN	ADAS	Real Time Lightning Data	TBA
15	TRACON/ITWS	To/From Other TRACON/ITWS	ITWS Data	TBA
16	NWSTG	FBWTG	Bulk Weather Data	TBA
17	FBWSTG	NFU	Selected Bulk Weather Data	TBA
18	NFU	Each TRACON/ITWS	Site Filtered Weather Model Data	TBA
19	TRACON/ITWS	GDLP	Local A/C Weather Condition Data	TBA
20	ADAS	ITWS	Weather Sensor Data	TBA
21	TRACON/ITWS	External Users	Near Real Time Local Weather Data	TBA

The present-day ITWS functional architecture requires two main functional inputs. One is the grid information from the NWS. The other is the radar and weather sensor inputs from local facilities. The NWS grid data flows through the FBWTG to the ITWS NFU. The NFU forwards portions of the data to each ITWS PG. The PG also receives inputs from the local weather sensors and radar systems. The PG output feeds displays at the TRACONs, ATCTs, ARTCCs and other external users.

While many different ITWS inputs and outputs are carried on airport cable or existing external telecommunication circuits, additional interfacility circuits will be required to support the additional weather sources and the distribution of the output data. Figure 2.5 and Table 2.3 depict the arrangements that will be in place when ITWS is fielded. Appendix A identifies current circuit connectivity, new connections to be added, and circuits that may be discontinued due to the transition to the ITWS.

Relevant functional changes include the following:

- Commercial weather information sources are to be removed from the ad hoc local input to FAA operational personnel and replaced with a single set of nationally contracted, reliable inputs from known sources into known and maintained FAA termination points.
- The methods of generating weather information and near-term prediction will be replaced through extensive use of NWS predictive model output information. These outputs are transferred to the FAA Bulk Weather Telecommunications Gateway (FBWTG) from the NWS Telecommunications Gateway(NWSTG). The data is transferred, on an as available basis, using an 'FTP push' technique.
- Near real-time predictive information will be pre-digested and sent to displays for operations personnel to plan and respond to changing weather conditions in a timely fashion.
- Terminal Doppler Weather Radar (TDWR) information no longer will be independently displayed but will be included with other weather information on an integrated situation display(SD) in each operational location.
- External users will be provided with weather message information in much the same way as provided to the GDLP for served pilots.

2.3.1 ITWS Telecommunications Input

ITWS will receive data from several weather systems, as shown by 7 of the 15 dotted lines in Fig.2.5. It will use this information to produce a new set of terminal-area near-real-time enhanced weather products. The Initial Operational Capability (IOC) design architecture assumes a typical airport configuration as an ITWS site.

2.3.1.1 NWS Information to ITWS

Weather information gathered by the NWS is one ITWS input. AVN, MDCRS, Eta, and RUC data are routed from the NWSTG in Silver Spring, Md. to the FBWTG at the ATCSCC in Herndon, VA. MDCRS, Eta, and RUC data is forwarded to the ITWS NFU at the Kansas City (MCI) TRACON. AVN. Eta, and RUC data is forwarded to the WARP network.

The NFU breaks out the MDCRS, Eta, and RUC data into 34 sections, one for each ITWS PG location. Each location data package is forwarded to the NADIN node located in the Kansas City ARTCC. From there individual data messages are routed to the appropriate ITWS PG location. Figure 2.6 illustrates these connectivities.

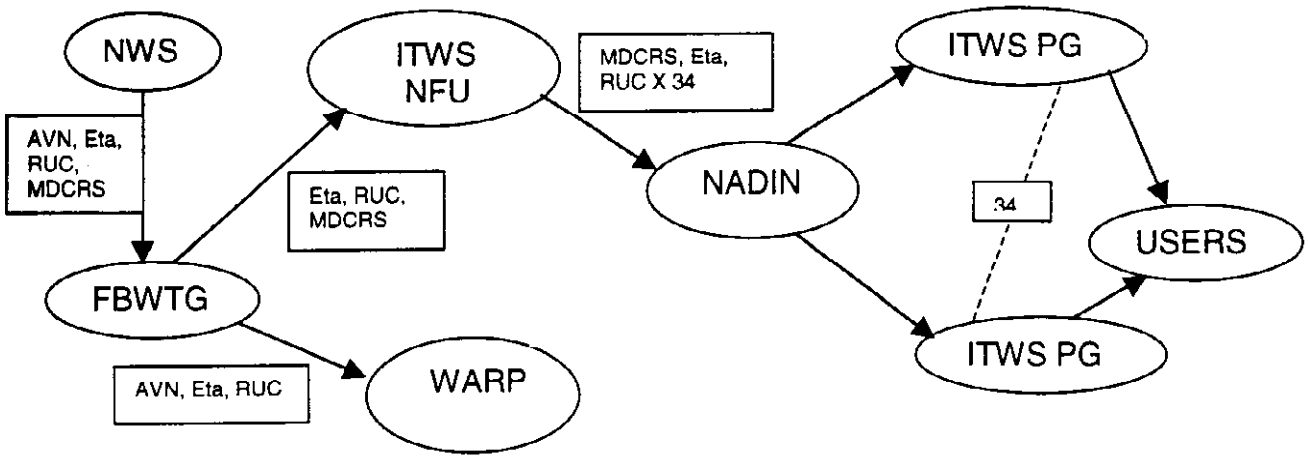


Figure 2.6 NWS-to-ITWS Data Flow

2.3.1.2 Weather Sensor Systems to ITWS Product Generator

In addition to the MDCRS, Eta and RUC data received from the NWS with intermediate NFU processing, the ITWS PG receives data from weather sensor and measurement systems located near the appropriate TRACON. The TDWR provides doppler radar weather products. The ASR-9 provides radar information on local airport heavy precipitation, such as thunderstorm activity with heavy rain or hail. NEXRAD also provides weather radar products to the ITWS. LLWAS provides low-level wind shear and microburst alert warnings from wind sensors located around an airport. ASOS and AWOS use a block of dedicated sensors to provide computer-processed data on altimeter setting, cloud condition, visibility, precipitation type (i.e., rain, snow) and amount, fog, haze, wind speed/direction, and temperature/dew point to the ITWS through the ADAS data acquisition system. Figure 2.7 illustrates these connectivities.

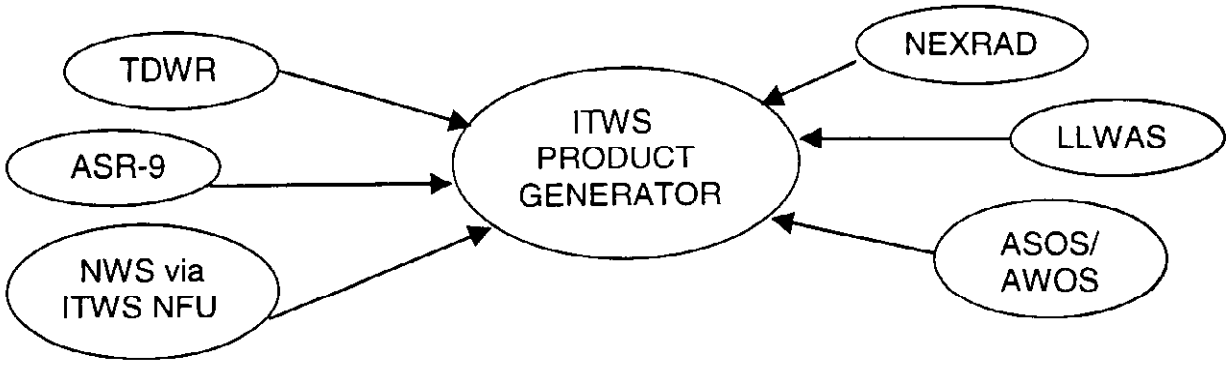


Figure 2.7 Weather Sensor Input to ITWS

2.3.2 Users of ITWS Output

There are three categories of ITWS product user: FAA/NAS operational specialists, individuals and organizations designated to receive selected information in support of their activity relative to NAS operations, and other NAS systems that need the information generated by ITWS. Table 2.4 lists users and the facility where these personnel perform their NAS function.

Facility	User Title	Access Method	Data Type
NAS OPERATIONAL USERS MAINTAINING SITUATIONAL AWARENESS			
ARTCC	CWSU Specialist	Remote SD	ALL ITWS Weather Products
ARTCC	CWSU Manager	Remote SD	ALL ITWS Weather Products
ARTCC	Enroute Controller	Remote SD	ALL ITWS Weather Products
ARTCC	ATC Manager	Remote SD	ALL ITWS Weather Products
ARTCC	Traffic Mgmt. Spec.	Remote SD	ALL ITWS Weather Products
ARTCC	Traffic Mgmt. Supv.	Remote SD	ALL ITWS Weather Products
NAS OPERATIONAL USERS USING DIRECT INFORMATION TO CARRY OUT THEIR FUNCTIONS			
TRACON	Approach Controller	Situation Display(SD)	ALL ITWS Weather Products
TRACON	Controller Supervisor	Situation Display(SD)	ALL ITWS Weather Products
TRACON	Departure Controller	Situation Display(SD)	ALL ITWS Weather Products
TRACON	Controller Supervisor	Situation Display(SD)	ALL ITWS Weather Products
TRACON	Weather Specialist	Situation Display(SD)	ALL ITWS Weather Products
TRACON	Traffic Mgmt. Spec.	Situation Display(SD)	ALL ITWS Weather Products
TRACON	Traffic Mgmt. Supv.	Situation Display(SD)	ALL ITWS Weather Products
NAS OPERATIONAL USERS USING DIRECT INFORMATION TO CARRY OUT THEIR FUNCTIONS			
Tower	ATCT Controller	Remote SD	ALL ITWS Weather Products
Tower	ATCT Supervisor	Remote SD	ALL ITWS Weather Products
NON-NAS USERS USING INFORMATION FOR FLIGHT PLANNING PURPOSES			
	Pilot (airborn)	DLP Weather Data	Weather Notification Messages
	Airline Operations	Direct DATACOM	Weather Notification Messages
	Military Base Ops.	Direct DATACOM	Weather Notification Messages
NAS OPERATIONAL SYSTEMS USING DIRECT INFORMATION TO CARRY OUT THEIR FUNCTIONS			
ARTCC	WARP	Direct DATACOM	Weather Notification Messages
TRACON/ARTCC	CTAS	Local DATACOM	Weather Products & Notifications

Table 2.4 Users of ITWS Output Information

2.3.3 ITWS Telecommunications Outputs

The ITWS will provide output data to the ITWS-provided SD and separately to the Ribbon Display Terminal (RBDT) located in the ATCT, TRACON, and ARTCCs. Also, It will provide data for the Data Link Processor –2A (DLP-2A) to up-link the appropriate messages to requesting pilots. Ports will be available for the use of other external users who may require the product data, and some users will be able to get weather text message alerts via NADIN PSN.

ITWS output data will contain the following information:

a. Wind shear,
b. Gust front wind shift estimate,
c. Precipitation,
d. Storm motion and extrapolated position,
e. Storm cell information,
f. ASR-9 aircraft position,
g. Tornado location,
h. Airport lightning activity,
i. Low level wind shear activity,
j. Terminal weather text message,
k. Runway configuration

2.4. ITWS Functional Connectivity – Summary

Figure 2.8, ITWS Function and Location Requirement Summary, summarizes functional requirements by identifying the local and remote PG sites, and SD locations at TRACONs, ATCTs and ARTCCs according to the functional services that pass information between the facilities. Sites are identified using Location ID and Facility Codes, functional services identified by service code, and Program Designator Codes (PDCs). These are shown in Appendix A.

Appendix C, ITWS Site Specific Functional Diagrams, shows the connectivities involved with each ITWS location. Each drawing identifies existing service and the new circuits required for implementing ITWS.

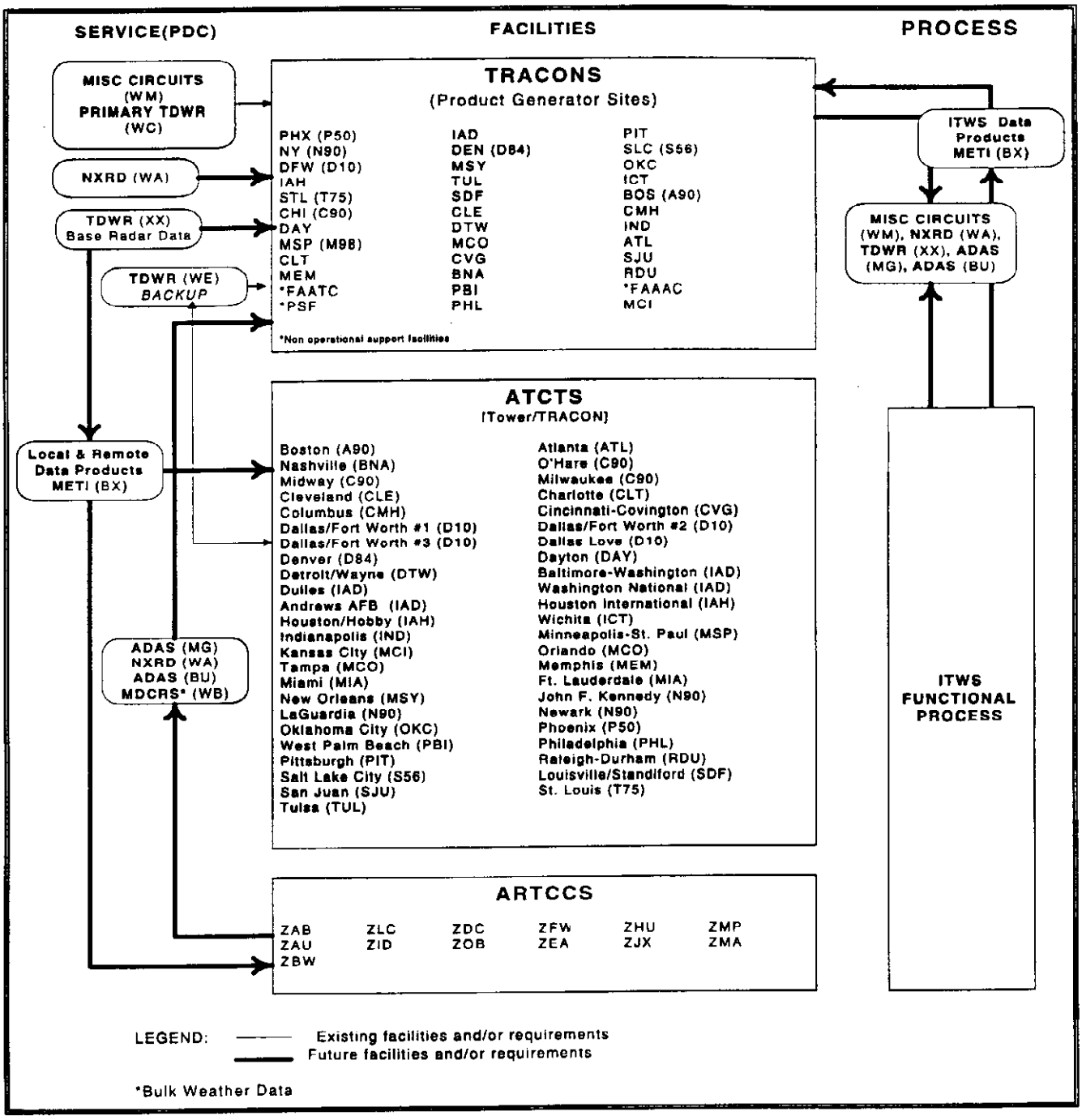


Figure 2.8 ITWS Function and Location Requirement Summary

3.0 INTERFACILITY TELECOMMUNICATIONS NETWORK DESIGN

(To be completed in Version 2 of the Telecommunications Program Plan)

This portion of the Telecommunication Program Plan will contain a number of diagrams that will present details of the generic interfacility communications links, including supporting equipment, and terminations that will be required to complete the telecommunication connectivities. The following outline will be used to develop this section:

3.1 General

3.2 Detailed Telecommunications Design

3.2.1 Systems

3.2.1.1 ASR-9 (diagram)

3.2.1.2 TDWR (diagram)

3.2.2 Facilities

3.2.2.1 TRACON - Typical, Complete (diagram)

3.2.2.2 ARTCC – Typical, Complete (diagram)

3.2.2.3 ATCT – Typical, Complete (diagram)

3.2.2.4 Total Typical Facilities (diagram)

3.2.3 Actual Locations (matrix diagram)

3.2.3.1 First Article Locations (diagram)

1. Kansas City
2. Houston
3. Tech Center
4. FAA PSF

3.2.3.2 Follow-on Locations (diagram)

4.0 INTERFACILITY TELECOMMUNICATIONS RESOURCES

(To be completed in Version 2 of the Telecommunications Program Plan)

This portion of the Telecommunications Program Plan document will discuss NADIN, LINCS, DMN, Bandwidth Manager, and other FAA telecommunications capabilities. It will provide details on how these services will be applied to the ITWS interfacility communications links.

5.0 TRANSITION PLANS

(To be completed in Version 2 of the Telecommunications Program Plan)

This portion of the Telecommunications Program Plan document will describe the procedures that will be used to transition operational weather systems to the ITWS system from their current configuration. This section will also discuss the implementation of new interfacility communications links.

APPENDIX A

INTEGRATED TERMINAL WEATHER SYSTEM (ITWS) TELECOMMUNICATIONS REQUIREMENTS

The purpose of this appendix is to list the Integrated Terminal Weather System (ITWS) telecommunications requirements.

A.1 Requirements

Table A.1-1 lists each requirement. The remainder of this section is a description of each field in Table A.1-1.

CIRCUIT — The first three columns define the type of requirement. "X" indicates "yes".

- CURENT — Indicates a required circuit is currently in operation.
- NEW — Indicates the requirement is new and a TSR/CSR will be required.
- DISC. — Indicates the circuit will be removed when implementation is complete.

PHASE — Identifies, with and "X", the appropriate phase for the action required on the circuit.

- FIRST ART — First Article sites. Locations for initial installation and preliminary system acceptance testing.
- BUILD 1 — ITWS installation locations assuming approval after First Article testing.
- BUILD 2 — ITWS locations for the last installation phase of the project.

WEATHER SYSTEM — Identifies the type of weather system (i.e., NEXRAD, TDWR, etc.) supported by the circuit. The weather system definition can be located in Appendix F, Abbreviations and Acronyms.

TYPE SERVICE — The weather application supported by ITWS.

PDC — *Program Description Code.* The following ITWS programs require telecommunications support and are identified by the appropriate service code and a brief description.

PDC	SERVICE	DESCRIPTION
WG	METI	ASR-9 Weather Processor circuits (Primary)
WH	METI	ASR-9 Weather Processor circuits (Diversity)
WC	TDWR	Terminal Doppler Weather Radar circuits
WE	TDWR	Terminal Doppler Weather Radar dial backup circuits
FI	LLWAS	Critical remote weather measuring circuits for RVR and LLWAS
WA	NXRD	Next Generation Weather Radar circuits
BU	AWOS	Dedicated weather network circuits (WCP, RWP, WSMCR, WMP, WARP)

FLID Identifies the "From" location.

FLID FAC Identifies the type of FLID facility.

TLID Identifies the "To" location.

TLID FAC Identifies the type of TLID facility.

TECHNICAL REMARKS Provides additional technical information related to the circuit requirements, status, mission, etc.

COMMENTS Provides additional information, description of mission, source of the requirement, etc.

TSR/CSR OPR Office responsible for preparing and coordinating ITWS CSRs and TSRs.

COORD Region of office responsible for the coordination of CSRs or TSRs at the distant end.

A.2 Comments

Appendix A lists the telecommunications requirements that must be satisfied top complete the interfacility connections for the ITWS system. The ordering and installation of circuits to support the system will start shortly after this TPP is approved.

Other aspects of the circuit requirements are known, but the information lacks sufficient refinement to complete all documentation. As requirements are refined, changes that impact some supporting circuits will occur. The change control process, noted in Appendix B, provides solutions to manage that process.

Al . A
ITWS TELECOMMUNIC...IONS REQUIREMENTS

CIRCUIT CURRENT	CIRCUIT NEW	CIRCUIT DISC.	FIRST ART	PHASE BUILD 1	PHASE BUILD 2	WEATHER SYSTEM	TYPE SERVICE	PDC	FLID	FLID FAC	TLID	TLID FAC	TECHNICAL REMARKS	COMMENTS	TSR/CSR OPR	COORD
NATIONAL WEATHER SERVICE (NWS)																
	X		X			NWS			NWS		DCC	SCC	1.5 Mbps	AVN, MDCRS, Eta, RUC		AEA
	X		X			NWS			DCC	SCC	MCI	TRACON	1024 kbps	MDCRS, Eta, RUC		ACE
FAA TECHNICAL CENTER (FAATC)																
	X		X			TDWR	TDWR	WC	PHL	TDWR	ACY	FAATC	1.5 Mbps	base data		AEA
X			X			TDWR	TDWR	WE	PHL	TDWR	ACY	FAATC	9.6 kbps	data products		AEA
X			X			ASR-9	METI	WG	ACY	ASR-9	ACY	FAATC	9.6 kbps	weather products		AEA
	X		X			NEXRAD	NXRD	WA	PHL	NEXRAD	ACY	FAATC	14.4 Mbps	Build 9 weather products		AEA
X			X			ITWS			ACY	ITWS	ZNY	ARTCC	4.8 kbps, NFU(tbd), 19.2 kbps, 1.2 kbps, 1.2 kbps	ADAS, NFU, SD, rem. site, ext user, RMMS, TWIP		AEA
	X		X			ITWS			ACY	FAATC	ACY	ATCT	19.2 kbps	display data		AEA
X			X			TDWR	TDWR	WC	PHL	TDWR	ACY	ATCT	9.6 kbps	weather products, display data		AEA
	X		X			NWS			MCI	TRACON	ACY	FAATC		MDCRS, Eta, RUC		AEA
KANSAS CITY (MCI)																
	X		X			TDWR	TDWR	WC	MCI	TDWR	MCI	TRACON	1.5 Mbps	base data		ACE
X			X			TDWR	TDWR	WE	MCI	TDWR	MCI	TRACON	9.6 kbps	data products		ACE
	X		X			TDWR	TDWR	WC	MCI	TDWR	SLC	ATCT	9.6 kbps	weather products, display data		ACE
X			X			ITWS			MCI	TRACON	SLC	ATCT	19.2 kbps	display data		ACE
X			X			ASR-9	METI	WG	MCI	ASR-9	MCI	TRACON	9.6 kbps	weather products		ACE
	X		X			ITWS			MCI	TRACON	ZKC	ARTCC	4.8 kbps, NFU(tbd), 19.2 kbps, 1.2 kbps, 1.2 kbps	ADAS, NFU, SD, rem. site, ext user, RMMS, TWIP		ACE
	X		X			NEXRAD	NXRD	WA	MCI	NEXRAD	MCI	TRACON	14.4 kbps	Build 9 weather products		ACE
	X		X			NWS			MCI	TRACON	MCI	TRACON		MDCRS, Eta, RUC		ACE
HOUSTON (IAH & HOU)																
	X		X			NEXRAD	NXRD	WA	HOU	NEXRAD	IAH	TRACON	14.4 kbps	Build 9 weather products		ASW
	X		X			ASR-9	METI	WG	HOU	ASR-9	IAH	TRACON	9.6 kbps	weather products		ASW
X			X			ASR-9	METI	WG	IAH	ASR-9	IAH	TRACON	9.6 kbps	weather products		ASW
	X		X			ITWS			IAH	TRACON	ZHU	ARTCC	4.8 kbps, NFU(tbd), 19.2 kbps, 1.2 kbps, 1.2 kbps	ADAS, NFU, SD, rem. site, ext user, RMMS, TWIP		ASW
	X		X			ITWS			IAH	TRACON	IAH	ATCT	19.2 kbps	display data		ASW
X			X			TDWR	TDWR	WC	IAH	TDWR	IAH	ATCT	9.6 kbps	weather products, display data		ASW
X			X			TDWR	TDWR	WE	IAH	TDWR	IAH	TRACON	9.6 kbps	data products		ASW
	X		X			TDWR	TDWR	WC	IAH	TDWR	IAH	TRACON	1.5 Mbps	base data		ASW
	X		X			ITWS			IAH	TRACON	HOU	ATCT	19.2 kbps	display data		ASW
X			X			TDWR	TDWR	WC	HOU	TDWR	HOU	ATCT	9.6 kbps	weather products, display data		ASW
X			X			TDWR	TDWR	WC	HOU	TDWR	IAH	TRACON	9.6 kbps	data products		ASW
X			X			TDWR	TDWR	WE	HOU	TDWR	HOU	TRACON	9.6 kbps	data products		ASW
	X		X			TDWR	TDWR	WC	HOU	TDWR	IAH	TRACON	1.5 Mbps	base data		ASW
	X		X			NWS			MCI	TRACON	IAH	TRACON		MDCRS, Eta, RUC		ASW
PROGRAM SUPPORT FACILITY (PSF)																
	X		X			TDWR	TDWR	WC	OKC	TDWR	OKC	PSF	1.5 Mbps	base data		ASW
X			X			TDWR	TDWR	WE	OKC	TDWR	OKC	PSF	9.6 kbps	data products		ASW
X			X			TDWR	TDWR	WC	OKC	TDWR	PSF	ATCT	9.6 kbps	weather products, display data		ASW
	X		X			ITWS			OKC	PSF	PSF	ATCT	19.2 kbps	display data		ASW
	X		X			ASR-9	METI	WG	OKC	ASR-9	OKC	PSF	9.6 kbps	weather products		ASW
	X		X			ITWS			OKC	PSF	ZKC	ARTCC	4.8 kbps, NFU(tbd), 19.2 kbps, 1.2 kbps, 1.2 kbps	ADAS, NFU, SD, rem. site, ext user, RMMS, TWIP		ASW
	X		X			NEXRAD	NXRD	WA	OKC	NEXRAD	OKC	PSF	14.4 kbps	Build 9 weather products		ASW
	X		X			NWS			MCI	TRACON	OKC	PSF		MDCRS, Eta, RUC		ASW

Al A
ITWS TELECOMMUNIC...IONS REQUIREMENTS

CIRCUIT CURRENT	CIRCUIT NEW	CIRCUIT DISC	FIRST ART	PHASE BUILD 1	PHASE BUILD 2	WEATHER SYSTEM	TYPE SERVICE	PDC	FLID	FLID FAC	TLID	TLID FAC	TECHNICAL REMARKS	COMMENTS	TSR/CSR OPR	COORD
MEMPHIS (MEM)																
	X			X		TDWR	TDWR	WC	MEM	TDWR	MEM	TRACON	1.5 Mbps	base data		ASO
X				X		TDWR	TDWR	WE	MEM	TDWR	MEM	TRACON	9.6 kbps	data products		ASO
X				X		TDWR	TDWR	WC	MEM	TDWR	MEM	ATCT	9.6 kbps	weather products, display data		ASO
	X			X		ITWS			MEM	TRACON	MEM	ATCT	19.2 kbps	display data		ASO
X				X		ASR-9	METI	WG	MEM	ASR-9	MEM	TRACON	9.6 kbps	weather products		ASO
	X			X		ITWS			MEM	TRACON	ZME	ARTCC	4.8 kbps, NFU(tbd), 19.2 kbps, 1.2 kbps, 1.2 kbps	ADAS, NFU, SD, rem. site, ext user, RMMS, TWIP		ASO
	X			X		NEXRAD	NXRD	WA	MEM	NEXRAD	MEM	TRACON	14.4 kbps	Build 9 weather products		ASO
	X			X		NWS			MCI	TRACON	MEM	TRACON		MDCRS, Eta, RUC		ASO
PHOENIX (PHX)																
	X			X		TDWR	TDWR	WC	PHX	TDWR	PHX	TRACON	1.5 Mbps	base data		AWP
X				X		TDWR	TDWR	WE	PHX	TDWR	PHX	TRACON	9.6 kbps	data products		AWP
X				X		TDWR	TDWR	WC	PHX	TDWR	PHX	ATCT	9.6 kbps	weather products, display data		AWP
	X			X		ITWS			PHX	TRACON	PHX	ATCT	19.2 kbps	display data		AWP
X				X		ASR-9	METI	WG	PHX	ASR-9	PHX	TRACON	9.6 kbps	weather products		AWP
	X			X		ITWS			PHX	TRACON	ZAB	ARTCC	4.8 kbps, NFU(tbd), 19.2 kbps, 1.2 kbps, 1.2 kbps	ADAS, NFU, SD, rem site, ext user, RMMS, TWIP		AWP
	X			X		NEXRAD	NXRD	WA	PHX	NEXRAD	PHX	TRACON	14.4 kbps	Build 9 weather products		AWP
	X			X		NWS			MCI	TRACON	PHX	TRACON		MDCRS, Eta, RUC		AWP
CHARLOTTE (CLT)																
	X			X		TDWR	TDWR	WC	CLT	TDWR	CLT	TRACON	1.5 Mbps	base data		ASO
X				X		TDWR	TDWR	WE	CLT	TDWR	CLT	TRACON	9.6 kbps	data products		ASO
X				X		TDWR	TDWR	WC	CLT	TDWR	CLT	ATCT	9.6 kbps	weather products, display data		ASO
	X			X		ITWS			CLT	TRACON	CLT	ATCT	19.2 kbps	display data		ASO
X				X		ASR-9	METI	WG	CLT	ASR-9	CLT	TRACON	9.6 kbps	weather products		ASO
	X			X		ITWS			CLT	TRACON	ZJX	ARTCC	4.8 kbps, 19.2 kbps	ADAS, SD, rem. Site, ext. user		ASO
	X			X		ITWS			CLT	TRACON	ZDC	ARTCC	4.8 kbps	ADAS		ASO
	X			X		ITWS			CLT	TRACON	ZTL	ARTCC	4.8 kbps, NFU(tbd), 19.2 kbps, 1.2 kbps, 1.2 kbps	ADAS, NFU, SD, rem. site, ext user, RMMS, TWIP		ASO
	X			X		NEXRAD	NXRD	WA	CLT	NEXRAD	CLT	TRACON	14.4 kbps	Build 9 weather products		ASO
	X			X		NWS			MCI	TRACON	CLT	TRACON		MDCRS, Eta, RUC		ASO
DALLAS/FORT WORTH (D10)																
	X			X		TDWR	TDWR	WC	DAL	TDWR	D10	TRACON	1.5 Mbps	base data		ASW
X				X		TDWR	TDWR	WE	DAL	TDWR	D10	TRACON	9.6 kbps	data products		ASW
X				X		TDWR	TDWR	WC	DAL	TDWR	DAL	ATCT	9.6 kbps	weather products, display products		ASW
	X			X		ITWS			D10	TRACON	DAL	ATCT	19.2 kbps	display data		ASW
	X			X		ITWS			D10	TRACON	ZFW	ATRTCC	4.8 kbps, NFU(tbd), 19.2 kbps, 1.2 kbps, 1.2 kbps	ADAS, SD, rem. Site, ext user		ASW
X				X		ASR-9	METI	WG	DFW	ASR-9/4	D10	TRACON	9.6 kbps	weather products		ASW
X				X		ASR-9	METI	WG	DFW	ASR-9/3	D10	TRACON	9.6 kbps	weather products		ASW
X				X		ASR-9	METI	WG	DFW	ASR-9/2	D10	TRACON	9.6 kbps	weather products		ASW
X				X		ASR-9	METI	WG	DFW	ASR-9/1	D10	TRACON	9.6 kbps	weather products		ASW
	X			X		ITWS			D10	TRACON	DFW	ATCT/1	19.2 kbps	display data		ASW
	X			X		ITWS			D10	TRACON	DFW	ATCT/2	19.2 kbps	display data		ASW
	X			X		ITWS			D10	TRACON	DFW	ATCT/3	19.2 kbps	display data		ASW
X				X		TDWR	TDWR	WE	DFW	TDWR	D10	TRACON	9.6 kbps	data products		ASW
	X			X		TDWR	TDWR	WC	DFW	TDWR	D10	TRACON	1.5 Mbps	base data		ASW
	X			X		NEXRAD	NXRD	WA	DFW	NEXRAD	D10	TRACON	14.4 kbps	Build 9 weather products		ASW
X				X		TDWR	TDWR	WC	DFW	TDWR	DFW	ATCT/3	9.6 kbps	weather products		ASW
X				X		TDWR	TDWR	WC	DFW	TDWR	DFW	ATCT/2	9.6 kbps	weather products		ASW
X				X		TDWR	TDWR	WC	DFW	TDWR	DFW	ATCT/1	9.6 kbps	weather products		ASW
X				X		LLWAS	METI	FI	DFW	LLWAS	DFW	TDWR	9.6 kbps	sensor data		ASW
X				X		LLWAS	METI	FI	DFW	LLWAS	DFW	ATCT/1	9.6 kbps	sensor data		ASW
X				X		LLWAS	METI	FI	DFW	LLWAS	DFW	ATCT/2	9.6 kbps	sensor data		ASW
X				X		LLWAS	METI	FI	DFW	LLWAS	DFW	ATCT/3	9.6 kbps	sensor data		ASW
	X			X		NWS			MCI	TRACON	DFW	TRACON		MDCRS, Eta, RUC		ASW
COVINGTON/CINCINNATI (CVG)																
	X			X		TDWR	TDWR	WC	CVG	TDWR	CVG	TRACON	1.5 Mbps	base data		AGL
X				X		TDWR	TDWR	WE	CVG	TDWR	CVG	TRACON	9.6 kbps	data products		AGL
X				X		TDWR	TDWR	WC	CVG	TDWR	CVG	ATCT	9.6 kbps	weather products, display data		AGL
	X			X		ITWS			CVG	TRACON	CVG	ATCT	19.2 kbps	display data		AGL

AI . A
ITWS TELECOMMUNIC...ONS REQUIREMENTS

CIRCUIT				PHASE		WEATHER	TYPE			FLID		TLID	TECHNICAL		TSR/CSR	
CURRENT	NEW	DISC	FIRST ART	BUILD 1	BUILD 2	SYSTEM	SERVICE	PDC	FLID	FAC	TLID	FAC	REMARKS	COMMENTS	OPR	COORD
X				X		ASR-9	ASR-9	WG	CVG	ASR-9	CVG	TRACON	9.6 kbps	weather products		AGL
	X			X		ITWS			CVG	TRACON	ZID	ARTCC	4.8 kbps, NFU(tbd), 19.2 kbps, 1.2 kbps, 1.2 kbps	ADAS, NFU, SD, rem site, ext user, RMMS, TWIP		AGL
	X			X		NEXRAD	NXRD	WA	CVG	NEXRAD	CVG	TRACON	14.4 kbps	Build 9 weather products		AGL
	X			X		NWS			MCI	TRACON	CVG	TRACON		MDCRS, Eta, RUC		AGL
ATLANTA (ATL)																
	X			X		TDWR	TDWR	WC	ATL	TDWR	ATL	TRACON	1.5 Mbps	base data		ASO
X				X		TDWR	TDWR	WE	ATL	TDWR	ATL	TRACON	9.6 kbps	data products		ASO
X				X		TDWR	TDWR	WC	ATL	TDWR	ATL	ATCT	9.6 kbps	weather products, display data		ASO
X				X		LLWAS	LLWAS	FI	ATL	LLWAS	ATL	TDWR	9.6 kbps	sensor data		ASO
X				X		LLWAS	LLWAS	FI	ATL	LLWAS	ATL	ATCT	9.6 kbps	sensor data		ASO
	X			X		ITWS			ATL	TRACON	ATL	ATCT	19.2 kbps	display data		ASO
	X			X		ITWS			ATL	TRACON	ZTL	ARTCC	4.8 kbps, NFU(tbd), 19.2 kbps, 1.2 kbps, 1.2 kbps	ADAS, NFU, SD, rem site, ext user, RMMS, TWIP		ASO
X				X		ASR-9	ASR-9	WG	ATL	ASR-9/1	ATL	TRACON	9.6 kbps	weather products		ASO
X				X		ASR-9	ASR-9	WG	ATL	ASR-9/2	ATL	TRACON	9.6 kbps	weather products		ASO
	X			X		NEXRAD	NXRD	WA	ATL	NEXRAD	ATL	TRACON	14.4 kbps	Build 9 weather products		ASO
	X			X		NWS			MCI	TRACON	ATL	TRACON		MDCRS, Eta, RUC		ASO
FAA ACADEMY																
	X			X		TDWR	TDWR	WC	OKC	TDWR	FAA	ACADEMY	1.5 Mbps	base data		ASW
X				X		TDWR	TDWR	WE	OKC	TDWR	FAA	ACADEMY	9.6 kbps	data products		ASW
X				X		TDWR	TDWR	WC	OKC	TDWR	FAA	ATCT	9.6 kbps	weather products, display data		ASW
	X			X		ITWS			FAA	ACADEMY	FAA	ATCT	19.2 kbps	display data		ASW
X				X		ASR-9	ASR-9	WG	OKC	ASR-9	FAA	ACADEMY	9.6 kbps	weather products		ASW
	X			X		ITWS			FAA	ACADEMY	ZKC	ARTCC	4.8 kbps, NFU(tbd), 19.2 kbps, 1.2 kbps, 1.2 kbps	ADAS, NFU, SD, rem site, ext user, RMMS, TWIP		ASW
	X			X		NEXRAD	NXRD	WA	OKC	NEXRAD	FAA	ACADEMY	14.4 kbps	Build 9 weather products		ASW
	X			X		NWS			MCI	TRACON	FAA	ACADEMY		MDCRS, Eta, RUC		ASW
NEW ORLEANS (MSY)																
	X			X		TDWR	TDWR	WC	MSY	TDWR	MSY	TRACON	1.5 Mbps	base data		ASW
X				X		TDWR	TDWR	WE	MSY	TDWR	MSY	TRACON	9.6 kbps	data products		ASW
X				X		TDWR	TDWR	WC	MSY	TDWR	MSY	ATCT	9.6 kbps	weather products, display data		ASW
X				X		LLWAS	LLWAS	FI	MSY	LLWAS	MSY	TDWR	9.6 kbps	sensor dasta		ASW
X				X		LLWAS	LLWAS	FI	MSY	LLWAS	MSY	ATCT	9.6 kbps	sensor dasta		ASW
	X			X		ITWS			MSY	TRACON	MSY	ATCT	19.2 kbps	display data		ASW
X				X		ASR-9	ASR-9	WG	MSY	ASR-9	MSY	TRACON	9.6 kbps	weather products		ASW
	X			X		ITWS			MSY	TRACON	ZHU	ARTCC	4.8 kbps, NFU(tbd), 19.2 kbps, 1.2 kbps, 1.2 kbps	ADAS, NFU, SD, rem site, ext user, RMMS, TWIP		ASW
	X			X		NEXRAD	NXRD	WA	BTR	NEXRAD	MSY	TRACON	14.4 kbps	Build 9 weather products		ASW
	X			X		NEXRAD	NXRD	WA	MSY	NEXRAD	MSY	TRACON	14.4 kbps	Build 9 weather products		ASW
	X			X		NWS			MCI	TRACON	MSY	TRACON		MDCRS, Eta, RUC		ASW

ITWS TELECOMMUNICATIONS REQUIREMENTS

CIRCUIT CURRENT	CIRCUIT NEW	CIRCUIT DISC.	FIRST ART	PHASE BUILD 1	PHASE BUILD 2	WEATHER SYSTEM	TYPE SERVICE	PDC	FLID	FLID FAC	TLID	TLID FAC	TECHNICAL REMARKS	COMMENTS	TSR/CSR OPR	COORD
MIAMI (MIA)																
	X			X		TDWR	TDWR	WC	MIA	TDWR	MIA	TRACON	1.5 Mbps	base data		ASO
	X			X		TDWR	TDWR	WC	FLL	TDWR	MIA	TRACON	1.5 Mbps	base data		ASO
X				X		TDWR	TDWR	WE	MIA	TDWR	MIA	TRACON	9.6 kbps	data products		ASO
X				X		TDWR	TDWR	WC	MIA	TDWR	MIA	ATCT	9.6 kbps	weather products, display data		ASO
	X			X		ITWS			MIA	TRACON	MIA	ATCT	19.2 kbps	display data		ASO
X				X		ASR-9	ASR-9	WG	FLL	ASR-9	MIA	TRACON	9.6 kbps	weather products		ASO
X				X		ASR-9	ASR-9	WG	MIA	ASR-9	MIA	TRACON	9.6 kbps	weather products		ASO
	X			X		ITWS			MIA	TRACON	ZME	ARTCC	4.8 kbps, NFU(tbd), 19.2 kbps, 1.2 kbps, 1.2 kbps	ADAS, NFU, SD, rem site, ext user, RMMS, TWIP		ASO
	X			X		NEXRAD	NXRD	WA	MIA	NEXRAD	MIA	TRACON	14.4 kbps	Build 9 weather products		ASO
	X			X		NWS			MCI	TRACON	MIA	TRACON		MDCRS, Eta, RUC		ASO
WEST PALM BEACH (PBI)																
	X			X		TDWR	TDWR	WC	PBI	TDWR	PBI	TRACON	1.5 Mbps	base data		ASO
X				X		TDWR	TDWR	WE	PBI	TDWR	PBI	TRACON	9.6 kbps	data products		ASO
X				X		TDWR	TDWR	WC	PBI	TDWR	PBI	ATCT	9.6 kbps	weather products, display data		ASO
	X			X		ITWS			PBI	TRACON	PBI	ATCT	19.2 kbps	display data		ASO
X				X		ASR-9	ASR-9	WG	FLL	ASR-9	PBI	TRACON	9.6 kbps	weather products		ASO
	X			X		ITWS			PBI	TRACON	ZME	ARTCC	4.8 kbps, NFU(tbd), 19.2 kbps, 1.2 kbps, 1.2 kbps	ADAS, NFU, SD, rem site, ext user, RMMS, TWIP		ASO
	X			X		NEXRAD	NXRD	WA	MIA	NEXRAD	PBI	TRACON	14.4 kbps	Build 9 weather products		ASO
	X			X		NWS			MCI	TRACON	PBI	TRACON		MDCRS, Eta, RUC		ASO
ST. LOUIS (STL/t75)																
	X			X		TDWR	TDWR	WC	STL	TDWR	STL	TRACON	1.5 Mbps	base data		ACE
X				X		TDWR	TDWR	WE	STL	TDWR	STL	TRACON	9.6 kbps	data products		ACE
X				X		TDWR	TDWR	WC	STL	TDWR	STL	ATCT	9.6 kbps	weather products, display data		ACE
X				X		LLWAS	LLWAS	FI	STL	LLWAS	STL	TDWR	9.6 kbps	sensor data		ACE
X				X		LLWAS	LLWAS	FI	STL	LLWAS	STL	ATCT	9.6 kbps	sensor data		ACE
	X			X		ITWS			STL	TRACON	STL	ATCT	19.2 kbps	display data		ACE
X				X		ASR-9	ASR-9	WG	STL	ASR-9	STL	TRACON	9.6 kbps	weather products		ACE
	X			X		ITWS			STL	TRACON	ZKC	ARTCC	4.8 kbps, NFU(tbd), 19.2 kbps, 1.2 kbps, 1.2 kbps	ADAS, NFU, SD, rem site, ext user, RMMS, TWIP		ACE
	X			X		NEXRAD	NXRD	WA	STL	NEXRAD	STL	TRACON	14.4 kbps	Build 9 weather products		ACE
	X			X		NWS			MCI	TRACON	STL	TRACON		MDCRS, Eta, RUC		ACE
ORLANDO (MCO)																
	X			X		TDWR	TDWR	WC	MCO	TDWR	MCO	TRACON	1.5 Mbps	base data		ASO
X				X		TDWR	TDWR	WE	MCO	TDWR	MCO	TRACON	9.6 kbps	data products		ASO
X				X		TDWR	TDWR	WC	MCO	TDWR	MCO	ATCT	9.6 kbps	weather products, display data		ASO
X				X		LLWAS	LLWAS	FI	MCO	LLWAS	MCO	TDWR	9.6 kbps	sensor data		ASO
X				X		LLWAS	LLWAS	FI	MCO	LLWAS	MCO	ATCT	9.6 kbps	sensor data		ASO
	X			X		ITWS			MCO	TRACON	MCO	ATCT	19.2 kbps	display data		ASO
X				X		ASR-9	ASR-9	WG	MCO	ASR-9	MCO	TRACON	9.6 kbps	weather products		ASO
	X			X		ASR-9	ASR-9	WG	TPA	ASR-9	MCO	TRACON	9.6 kbps	weather products		ASO
	X			X		ITWS			MCO	TRACON	ZJX	ARTCC	4.8 kbps, NFU(tbd), 19.2 kbps, 1.2 kbps, 1.2 kbps	ADAS, NFU, SD, rem site, ext user, RMMS, TWIP		ASO
	X			X		ITWS			MCO	TRACON	ZME	ARTCC	4.8 kbps	ADAS		ASO
	X			X		ITWS			MCO	TRACON	TPA	TRACON	19.2 kbps	display data		ASO
	X			X		ITWS			MCO	TRACON	TPA	ATCT	19.2 kbps	display data		ASO
	X			X		TDWR	TDWR	WC	TPA	TDWR	MCO	TRACON	1.5 Mbps	base data		ASO
X				X		TDWR	TDWR	WC	TPA	TDWR	TPA	ATCT	9.6 kbps	weather products, display data		ASO
X				X		LLWAS	LLWAS	FI	TPA	LLWAS	TPA	TDWR	9.6 kbps	sensor data		ASO
X				X		LLWAS	LLWAS	FI	TPA	LLWAS	TPA	ATCT	9.6 kbps	sensor data		ASO
X				X		TDWR	TDWR	WC	TPA	TDWR	TPA	TRACON	9.6 kbps	data products		ASO
	X			X		NEXRAD	NXRD	WA	TPA	NEXRAD	MCO	TRACON	14.4 kbps	Build 9 weather products		ASO
	X			X		NWS			MCI	TRACON	TPA	TRACON		MDCRS, Eta, RUC		ASO
	X			X		NWS			MCI	TRACON	MCO	TRACON		MDCRS, Eta, RUC		ASO
INDIANAPOLIS (IND)																
	X			X		TDWR	TDWR	WC	IND	TDWR	IND	TRACON	1.5 Mbps	base data		AGL
X				X		TDWR	TDWR	WE	IND	TDWR	IND	TRACON	9.6 kbps	data products		AGL
X				X		TDWR	TDWR	WC	IND	TDWR	IND	ATCT	9.6 kbps	weather products, display data		AGL
	X			X		ITWS			IND	TRACON	IND	ATCT	19.2 kbps	display data		AGL
X				X		ASR-9	ASR-9	WG	IND	ASR-9	IND	TRACON	9.6 kbps	weather products		AGL

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ITWS TELECOMMUNICATIONS REQUIREMENTS

CIRCUIT CURRENT	CIRCUIT NEW	CIRCUIT DISC.	FIRST ART	PHASE BUILD 1	PHASE BUILD 2	WEATHER SYSTEM	TYPE SERVICE	PDC	FLID	FLID FAC	TLID	TLID FAC	TECHNICAL REMARKS	COMMENTS	TSR/CSR OPR	COORD
	X			X		ITWS			IND	TRACON	ZID	ARTCC	4.8 kbps, NFU(tbd), 19.2 kbps, 1.2 kbps, 1.2 kbps	ADAS, NFU, SD, rem site, ext user, RMMS, TWIP		AGL
	X			X		ITWS			IND	TRACON	ZAU	ARTCC	4.8 kbps	ADAS		AGL
	X			X		NEXRAD	NXRD	WA	IND	NEXRAD	IND	TRACON	14.4 kbps	Build 9 weather products		AGL
	X			X		NWS			MCI	TRACON	IND	TRACON		MDCRS, Eta, RUC		AGL
NASHVILLE (BNA)																
	X			X		TDWR	TDWR	WC	BNA	TDWR	BNA	TRACON	1.5 Mbps	base data		ASO
X				X		TDWR	TDWR	WE	BNA	TDWR	BNA	TRACON	9.6 kbps	data products		ASO
X				X		TDWR	TDWR	WC	BNA	TDWR	BNA	ATCT	9.6 kbps	weather products, display data		ASO
	X			X		ITWS			BNA	TRACON	BNA	ATCT	19.2 kbps	display data		ASO
X				X		ASR-9	ASR-9	WG	BNA	ASR-9	BNA	TRACON	9.6 kbps	weather products		ASO
	X			X		ITWS			BNA	TRACON	ZME	ARTCC	4.8 kbps, NFU(tbd), 19.2 kbps, 1.2 kbps, 1.2 kbps	ADAS, NFU, SD, rem site, ext user, RMMS, TWIP		ASO
	X			X		ITWS			BNA	TRACON	ZID	ARTCC	4.8 kbps	ADAS		ASO
	X			X		NEXRAD	NXRD	WA	BNA	NEXRAD	BNA	TRACON	14.4 kbps	Build 9 weather products		ASO
	X			X		NWS			MCI	TRACON	BNA	TRACON		MDCRS, Eta, RUC		ASO
PHILADELPHIA (PHL)																
	X			X		TDWR	TDWR	WC	PHL	TDWR	PHL	TRACON	1.5 Mbps	base data		AEA
X				X		TDWR	TDWR	WE	PHL	TDWR	PHL	TRACON	9.6 kbps	data products		AEA
X				X		TDWR	TDWR	WC	PHL	TDWR	PHL	ATCT	9.6 kbps	weather products, display data		AEA
	X			X		ITWS			PHL	TRACON	PHL	ATCT	19.2 kbps	display data		AEA
X				X		ASR-9	ASR-9	WG	PHL	ASR-9	PHL	TRACON	9.6 kbps	weather products		AEA
	X			X		ITWS			PHL	TRACON	ZNY	ARTCC	4.8 kbps, NFU(tbd), 19.2 kbps, 1.2 kbps, 1.2 kbps	ADAS, NFU, SD, rem site, ext user, RMMS, TWIP		AEA
	X			X		ITWS			PHL	TRACON	ZDC	ARTCC	4.8 kbps	ADAS		AEA
	X			X		NEXRAD	NXRD	WA	PHL	NEXRAD	PHL	TRACON	14.4 kbps	Build 9 weather products		AEA
	X			X		NWS			MCI	TRACON	PHL	TRACON		MDCRS, Eta, RUC		AEA
WASHINGTON DC (IAD)																
	X			X		TDWR	TDWR	WC	IAD	TDWR	IAD	TRACON	1.5 Mbps	base data		AEA
X				X		TDWR	TDWR	WE	IAD	TDWR	IAD	TRACON	9.6 kbps	data products		AEA
X				X		TDWR	TDWR	WC	IAD	TDWR	IAD	ATCT	9.6 kbps	weather products, display data		AEA
	X			X		TDWR	TDWR	WC	ADW	TDWR	IAD	TRACON	1.5 Mbps	base data		AEA
X				X		TDWR	TDWR	WE	ADW	TDWR	IAD	TRACON	9.6 kbps	data products		AEA
X				X		TDWR	TDWR	WC	ADW	TDWR	ADW	ATCT	9.6 kbps	weather products, display data		AEA
	X			X		ITWS			IAD	TRACON	IAD	ATCT	19.2 kbps	display data		AEA
	X			X		ITWS			IAD	TRACON	ADW	ATCT	19.2 kbps	display data		AEA
	X			X		ITWS			IAD	TRACON	BWI	ATCT	19.2 kbps	display data		AEA
	X			X		TDWR	TDWR	WC	BWI	TDWR	IAD	TRACON	1.5 Mbps	base data		AEA
X				X		TDWR	TDWR	WE	BWI	TDWR	IAD	TRACON	9.6 kbps	data products		AEA
X				X		TDWR	TDWR	WC	BWI	TDWR	BWI	ATCT	9.6 kbps	weather products, display data		AEA
X				X		ASR-9	ASR-9	WG	IAD	ASR-9	IAD	TRACON	9.6 kbps	weather products		AEA
	X			X		ASR-9	ASR-9	WG	DCA	ASR-9	IAD	TRACON	9.6 kbps	weather products		AEA
	X			X		ASR-9	ASR-9	WG	BWI	ASR-9	IAD	TRACON	9.6 kbps	weather products		AEA
	X			X		ASR-9	ASR-9	WG	ADW	ASR-9	IAD	TRACON	9.6 kbps	weather products		AEA
	X			X		ITWS			IAD	TRACON	ZDC	ARTCC	4.8 kbps, NFU(tbd), 19.2 kbps, 1.2 kbps, 1.2 kbps	ADAS, NFU, SD, rem site, ext user, RMMS, TWIP		AEA
	X			X		ITWS			IAD	TRACON	ZNY	ARTCC	4.8 kbps	ADAS		AEA
	X			X		ITWS			IAD	TRACON	BWI	TRACON	19.2 kbps	display data		AEA
	X			X		ITWS			IAD	TRACON	DCA	TRACON	19.2 kbps	display data		AEA
	X			X		TDWR	TDWR	WC	DCA	TDWR	IAD	TRACON	1.5 Mbps	base data		AEA
X				X		TDWR	TDWR	WE	DCA	TDWR	IAD	TRACON	9.6 kbps	data products		AEA
X				X		TDWR	TDWR	WC	DCA	TDWR	DCA	ATCT	9.6 kbps	weather products, display data		AEA
	X			X		ITWS			IAD	TRACON	DCA	ATCT	19.2 kbps	display data		AEA
	X			X		NEXRAD	NXRD	WA	BWI	NEXRAD	IAD	TRACON	14.4 kbps	Build 9 weather products		AEA
	X			X		NWS			MCI	TRACON	IAD	TRACON		MDCRS, Eta, RUC		AEA
DENVER (D84)																
	X			X		TDWR	TDWR	WC	DEN	TDWR	D84	TRACON	1.5 Mbps	base data		ANM
X				X		TDWR	TDWR	WE	DEN	TDWR	D84	TRACON	9.6 kbps	data products		ANM
X				X		TDWR	TDWR	WC	DEN	TDWR	DEN	ATCT	9.6 kbps	weather products, display data		ANM
	X			X		ITWS			D84	TRACON	DEN	ATCT	19.2 kbps	display data		ANM
X				X		ASR-9	ASR-9	WG	DEN	ASR-9	D84	TRACON	9.6 kbps	weather products		ANM
	X			X		ITWS			D84	TRACON	ZDV	ARTCC	4.8 kbps, NFU(tbd), 19.2 kbps, 1.2 kbps, 1.2 kbps	ADAS, NFU, SD, rem site, ext user, RMMS, TWIP		ANM

AI . A

ITWS TELECOMMUNIC...ONS REQUIREMENTS

CURRENT	CIRCUIT NEW	DISC.	FIRST ART	PHASE BUILD 1	BUILD 2	WEATHER SYSTEM	TYPE SERVICE	PDC	FLID	FLID FAC	TLID	TLID FAC	TECHNICAL REMARKS	COMMENTS	TSR/CSR OPR	COORD
	X			X		NEXRAD	NXRD	WA	DEN	NEXRAD	D84	TRACON	14.4 kbps	Build 9 weather products		ANM
	X			X		NWS			MCI	TRACON	D84	TRACON		MDCRS, Eta, RUC		ANM
BOSTON (A90)																
	X			X		TDWR	TDWR	WC	BOS	TDWR	A90	TRACON	1.5 Mbps	base data		ANE
X				X		TDWR	TDWR	WE	BOS	TDWR	A90	TRACON	9.6 kbps	data products		ANE
X				X		TDWR	TDWR	WC	BOS	TDWR	BOS	ATCT	9.6 kbps	weather products, display data		ANE
	X			X		ITWS			A90	TRACON	BOS	ATCT	19.2 kbps	display data		ANE
X				X		ASR-9	ASR-9	WG	BOS	ASR-9/1	A90	TRACON	9.6 kbps	weather products		ANE
X				X		ASR-9	ASR-9	WG	BOS	ASR-9/2	A90	TRACON	9.6 kbps	weather products		ANE
	X			X		ITWS			A90	TRACON	ZBW	ARTCC	4.8 kbps, NFU(tbd), 19.2 kbps, 1.2 kbps, 1.2 kbps	ADAS, NFU, SD, rem site, ext user, RMMS, TWIP		ANE
	X			X		NEXRAD	NXRD	WA	BOS	NEXRAD	A90	TRACON	14.4 kbps	Build 9 weather products		ANE
	X			X		NWS			MCI	TRACON	A90	TRACON		MDCRS, Eta, RUC		ANE
MINNEAPOLIS (M98)																
	X			X		TDWR	TDWR	WC	MSP	TDWR	M98	TRACON	1.5 Mbps	base data		AGL
X				X		TDWR	TDWR	WE	MSP	TDWR	M98	TRACON	9.6 kbps	data products		AGL
X				X		TDWR	TDWR	WC	MSP	TDWR	MSP	ATCT	9.6 kbps	weather products, display data		AGL
	X			X		ITWS			M98	TRACON	MSP	ATCT	19.2 kbps	display data		AGL
X				X		ASR-9	ASR-9	WG	MSP	ASR-9	M98	TRACON	9.6 kbps	weather products		AGL
	X			X		ITWS			M98	TRACON	ZMP	ARTCC	4.8 kbps, NFU(tbd), 19.2 kbps, 1.2 kbps, 1.2 kbps	ADAS, NFU, SD, rem site, ext user, RMMS, TWIP		AGL
	X			X		NEXRAD	NXRD	WA	MSP	NEXRAD	M98	TRACON	14.4 kbps	Build 9 weather products		AGL
	X			X		NWS			MCI	TRACON	M98	TRACON		MDCRS, Eta, RUC		AGL
PITTSBURGH (PIT)																
	X			X		TDWR	TDWR	WC	PIT	TDWR	PIT	TRACON	1.5 Mbps	base data		AEA
X				X		TDWR	TDWR	WE	PIT	TDWR	PIT	TRACON	9.6 kbps	data products		AEA
X				X		TDWR	TDWR	WC	PIT	TDWR	PIT	ATCT	9.6 kbps	weather products, display data		AEA
	X			X		ITWS			PIT	TRACON	PIT	ATCT	19.2 kbps	display data		AEA
X				X		ASR-9	ASR-9	WG	PIT	ASR-9	PIT	TRACON	9.6 kbps	weather products		AEA
	X			X		ITWS			PIT	TRACON	ZOB	ARTCC	4.8 kbps, NFU(tbd), 19.2 kbps, 1.2 kbps, 1.2 kbps	ADAS, NFU, SD, rem site, ext user, RMMS, TWIP		AEA
	X			X		ITWS			PIT	TRACON	ZDC	ARTCC	4.8 kbps	ADAS		AEA
	X			X		NEXRAD	NXRD	WA	PIT	NEXRAD	PIT	TRACON	14.4 kbps	Build 9 weather products		AEA
	X			X		NWS			MCI	TRACON	PIT	TRACON		MDCRS, Eta, RUC		AEA
SALT LAKE CITY (S56)																
	X			X		TDWR	TDWR	WC	SLC	TDWR	S56	TRACON	1.5 Mbps	base data		ANM
X				X		TDWR	TDWR	WE	SLC	TDWR	S56	TRACON	9.6 kbps	data products		ANM
X				X		TDWR	TDWR	WC	SLC	TDWR	SLC	ATCT	9.6 kbps	weather products, display data		ANM
	X			X		ITWS			S56	TRACON	SLC	ATCT	19.2 kbps	display data		ANM
X				X		ASR-9	ASR-9	WG	SLC	ASR-9	S56	TRACON	9.6 kbps	weather products		ANM
	X			X		ITWS			S56	TRACON	ZLC	ARTCC	4.8 kbps, NFU(tbd), 19.2 kbps, 1.2 kbps, 1.2 kbps	ADAS, NFU, SD, rem site, ext user, RMMS, TWIP		ANM
	X			X		NEXRAD	NXRD	WA	SLC	NEXRAD	S56	TRACON	14.4 kbps	Build 9 weather products		ANM
	X			X		NWS			MCI	TRACON	S56	TRACON		MDCRS, Eta, RUC		ANM
CLEVELAND (CLE)																
	X				X	TDWR	TDWR	WC	CLE	TDWR	CLE	TRACON	1.5 Mbps	base data		AGL
X					X	TDWR	TDWR	WE	CLE	TDWR	CLE	TRACON	9.6 kbps	data products		AGL
X					X	TDWR	TDWR	WC	CLE	TDWR	CLE	ATCT	9.6 kbps	weather products, display data		AGL
	X				X	ITWS			CLE	TRACON	CLE	ATCT	19.2 kbps	display data		AGL
X					X	ASR-9	ASR-9	WG	CLE	ASR-9	CLE	TRACON	9.6 kbps	weather products		AGL
	X				X	ITWS			CLE	TRACON	ZOB	ARTCC	4.8 kbps, NFU(tbd), 19.2 kbps, 1.2 kbps, 1.2 kbps	ADAS, NFU, SD, rem site, ext user, RMMS, TWIP		AGL
	X				X	NEXRAD	NXRD	WA	CLE	NEXRAD	CLE	TRACON	14.4 kbps	Build 9 weather products		AGL
	X				X	NWS			MCI	TRACON	CLE	TRACON		MDCRS, Eta, RUC		AGL
TULSA (TUL)																
	X				X	TDWR	TDWR	WC	TUL	TDWR	TUL	TRACON	1.5 Mbps	base data		ASW
X					X	TDWR	TDWR	WE	TUL	TDWR	TUL	TRACON	9.6 kbps	data products		ASW
X					X	TDWR	TDWR	WC	TUL	TDWR	TUL	ATCT	9.6 kbps	weather products, display data		ASW
	X				X	ITWS			TUL	TRACON	TUL	ATCT	19.2 kbps	display data		ASW
X					X	ASR-9	ASR-9	WG	TUL	ASR-9	TUL	TRACON	9.6 kbps	weather products		ASW
	X				X	ITWS			TUL	TRACON	ZKC	ARTCC	4.8 kbps, NFU(tbd), 19.2 kbps, 1.2 kbps, 1.2 kbps	ADAS, NFU, SD, rem site, ext user, RMMS, TWIP		ASW
	X				X	ITWS			TUL	TRACON	ZFW	ARTCC	4.8 kbps	ADAS		ASW
	X				X	NEXRAD	NXRD	WA	TUL	NEXRAD	TUL	TRACON	14.4 kbps	Build 9 weather products		ASW

APPENDIX A
ITWS TELECOMMUNICATIONS REQUIREMENTS

CIRCUIT				PHASE		WEATHER	TYPE			FLID		TLID	TECHNICAL		TSR/CSR	
CURRENT	NEW	DISC.	FIRST ART	BUILD 1	BUILD 2	SYSTEM	SERVICE	PDC	FLID	FAC	TLID	FAC	REMARKS	COMMENTS	OPR	COORD
	X				X	NWS			MCI	TRACON	TUL	TRACON		MDCRS, Eta, RUC		ASW
CHICAGO (C90)																
	X				X	TDWR	TDWR	WC	MKE	TDWR	C90	TRACON	1.5 Mbps	base data		AGL
X					X	TDWR	TDWR	WE	MKE	TDWR	MKE	TRACON	9.6 kbps	data products		AGL
X					X	TDWR	TDWR	WC	MKE	TDWR	MKE	ATCT	9.6 kbps	weather products, display data		AGL
	X				X	ITWS			C90	TRACON	MKE	ATCT	19.2 kbps	display data		AGL
	X				X	ITWS			C90	TRACON	MKE	TRACON	19.2 kbps	display data		AGL
	X				X	TDWR	TDWR	WC	ORD	TDWR	C90	TRACON	1.5 Mbps	base data		AGL
X					X	TDWR	TDWR	WE	ORD	TDWR	C90	TRACON	9.6 kbps	data products		AGL
X					X	TDWR	TDWR	WC	ORD	TDWR	ORD	ATCT	9.6 kbps	weather products, display data		AGL
X					X	LLWAS	LLWAS	FI	ORD	LLWAS	ORD	TDWR	9.6 kbps	sensor data		AGL
X					X	LLWAS	LLWAS	FI	ORD	LLWAS	ORD	ATCT	9.6 kbps	sensor data		AGL
	X				X	ITWS			C90	TRACON	ORD	ATCT	19.2 kbps	display data		AGL
X					X	ASR-9	ASR-9	WG	ORD	ASR-9	C90	TRACON	9.6 kbps	weather products		AGL
	X				X	ASR-9	ASR-9	WG	MDW	ASR-9	C90	TRACON	9.6 kbps	weather products		AGL
	X				X	ASR-9	ASR-9	WG	MKE	ASR-9	C90	TRACON	9.6 kbps	weather products		AGL
	X				X	ITWS			C90	TRACON	ZAU	ARTCC	4.8 kbps, NFU(tbd), 19.2 kbps, 1.2 kbps, 1.2 kbps	ADAS, NFU, SD, rem site, ext user, RMMS, TWIP		AGL
	X				X	ITWS			C90	TRACON	ZMP	ARTCC	4.8 kbps	ADAS		AGL
	X				X	TDWR	TDWR	WC	MDW	TDWR	C90	TRACON	1.5 Mbps	base data		AGL
X					X	TDWR	TDWR	WC	MDW	TDWR	MDW	TRACON	9.6 kbps	data products		AGL
X					X	TDWR	TDWR	WC	MDW	TDWR	MDW	ATCT	9.6 kbps	weather products, display data		AGL
	X				X	ITWS			C90	TRACON	MDW	ATCT	19.2 kbps	display data		AGL
	X				X	NEXRAD	NXRD	WA	MKE	NEXRAD	C90	TRACON	14.4 kbps	Build 9 weather products		AGL
	X				X	NEXRAD	NXRD	WA	ORD	NEXRAD	C90	TRACON	14.4 kbps	Build 9 weather products		AGL
	X				X	NWS			MCI	TRACON	C90	TRACON		MDCRS, Eta, RUC		AGL
RALEIGH-DURHAM (RDU)																
	X				X	TDWR	TDWR	WC	RDU	TDWR	RDU	TRACON	1.5 Mbps	base data		ASO
X					X	TDWR	TDWR	WE	RDU	TDWR	RDU	TRACON	9.6 kbps	data products		ASO
X					X	TDWR	TDWR	WC	RDU	TDWR	RDU	ATCT	9.6 kbps	weather products, display data		ASO
	X				X	ITWS			RDU	TRACON	RDU	ATCT	19.2 kbps	display data		ASO
X					X	ASR-9	ASR-9	WG	RDU	ASR-9	RDU	TRACON	9.6 kbps	weather products		ASO
	X				X	ITWS			RDU	TRACON	ZDC	ARTCC	4.8 kbps, NFU(tbd), 19.2 kbps, 1.2 kbps, 1.2 kbps	ADAS, NFU, SD, rem site, ext user, RMMS, TWIP		ASO
	X				X	ITWS			RDU	TRACON	ZTL	ARTCC	4.8 kbps	ADAS		ASO
	X				X	NEXRAD	NXRD	WA	RDU	NEXRAD	RDU	TRACON	14.4 kbps	Build 9 weather products		ASO
	X				X	NWS			MCI	TRACON	RDU	TRACON		MDCRS, Eta, RUC		ASO
WICHITA (ICT)																
	X				X	TDWR	TDWR	WC	ICT	TDWR	ICT	TRACON	1.5 Mbps	base data		ACE
X					X	TDWR	TDWR	WE	ICT	TDWR	ICT	TRACON	9.6 kbps	data products		ACE
X					X	TDWR	TDWR	WC	ICT	TDWR	ICT	ATCT	9.6 kbps	weather products, display data		ACE
	X				X	ITWS			ICT	TRACON	ICT	ATCT	19.2 kbps	display data		ACE
X					X	ASR-9	ASR-9	WG	ICT	ASR-9	ICT	TRACON	9.6 kbps	weather products		ACE
	X				X	ITWS			ICT	TRACON	ZKC	ARTCC	4.8 kbps, NFU(tbd), 19.2 kbps, 1.2 kbps, 1.2 kbps	ADAS, NFU, SD, rem site, ext user, RMMS, TWIP		ACE
	X				X	NEXRAD	NXRD	WA	ICT	NEXRAD	ICT	TRACON	14.4 kbps	Build 9 weather products		ACE
	X				X	NWS			MCI	TRACON	ICT	TRACON		MDCRS, Eta, RUC		ACE
DETROIT/WAYNE (DTW)																
	X				X	TDWR	TDWR	WC	DTW	TDWR	DTW	TRACON	1.5 Mbps	base data		AGL
X					X	TDWR	TDWR	WE	DTW	TDWR	DTW	TRACON	9.6 kbps	data products		AGL
X					X	TDWR	TDWR	WC	DTW	TDWR	DTW	ATCT	9.6 kbps	weather products, display data		AGL
	X				X	ITWS			DTW	TRACON	DTW	ATCT	19.2 kbps	display data		AGL
X					X	ASR-9	ASR-9	WG	DTW	ASR-9	DTW	TRACON	9.6 kbps	weather products		AGL
	X				X	ITWS			DTW	TRACON	ZOB	ARTCC	4.8 kbps, NFU(tbd), 19.2 kbps, 1.2 kbps, 1.2 kbps	ADAS, NFU, SD, rem site, ext user, RMMS, TWIP		AGL
	X				X	NEXRAD	NXRD	WA	DTW	NEXRAD	DTW	TRACON	14.4 kbps	Build 9 weather products		AGL
	X				X	NWS			MCI	TRACON	DTW	TRACON		MDCRS, Eta, RUC		AGL
COLUMBUS (CMH)																
	X				X	TDWR	TDWR	WC	CMH	TDWR	CMH	TRACON	1.5 Mbps	base data		AGL
X					X	TDWR	TDWR	WE	CMH	TDWR	CMH	TRACON	9.6 kbps	data products		AGL
X					X	TDWR	TDWR	WC	CMH	TDWR	CMH	ATCT	9.6 kbps	weather products, display data		AGL
	X				X	ITWS			CMH	TRACON	CMH	ATCT	19.2 kbps	display data		AGL

AI . A
ITWS TELECOMMUNI...ONS REQUIREMENTS

	CIRCUIT			PHASE		WEATHER	TYPE			FLID		TLID	TECHNICAL		TSR/CSR	
CURRENT	NEW	DISC.	FIRST ART	BUILD 1	BUILD 2	SYSTEM	SERVICE	PDC	FLID	FAC	TLID	FAC	REMARKS	COMMENTS	OPR	COORD
X					X	ASR-9	ASR-9	WG	CMH	ASR-9	CMH	TRACON	9.6 kbps	weather products		AGL
	X				X	ITWS			CMH	TRACON	ZID	ARTCC	4.8 kbps, NFU(tbd), 19.2 kbps, 1.2 kbps, 1.2 kbps	ADAS, NFU, SD, rem site, ext user, RMMS, TWIP		AGL
	X				X	ITWS			CMH	TRACON	ZOB	ARTCC	4.8 kbps	ADAS		AGL
	X				X	NEXRAD	NXRD	WA	CVG	NEXRAD	CMH	TRACON	14.4 kbps	Build 9 weather products		AGL
	X				X	NWS			MCI	TRACON	CMH	TRACON		MDCRS, Eta, RUC		AGL

AI . A
ITWS TELECOMMUNICATIONS REQUIREMENTS

	CIRCUIT			PHASE		WEATHER	TYPE			FLID		TLID	TECHNICAL		TSR/CSR	
CURRENT	NEW	DISC.	FIRST ART	BUILD 1	BUILD 2	SYSTEM	SERVICE	PDC	FLID	FAC	TLID	FAC	REMARKS	COMMENTS	OPR	COORD
SAN JUAN (SJU)																
	X				X	TDWR	TDWR	WC	SJU	TDWR	SJU	TRACON	1.5 Mbps	base data		
X					X	TDWR	TDWR	WE	SJU	TDWR	SJU	TRACON	9.6 kbps	data products		
X					X	TDWR	TDWR	WC	SJU	TDWR	SJU	ATCT	9.6 kbps	weather products, display data		
	X				X	ITWS			SJU	TRACON	SJU	ATCT	19.2 kbps	display data		
	X				X	ITWS			SJU	TRACON	SJU	CERAP	4.8 kbps, NFU(tbd), 19.2 kbps, 1.2 kbps, 1.2 kbps	ADAS, NFU, SD, rem site, ext user, RMMS, TWIP		
	X				X	ITWS			SJU	TRACON	SJU	CERAP	19.2 kbps	SD, rem sites, ext users		
	X				X	NEXRAD	NXRD	WA	SJU	NEXRAD	SJU	TRACON	14.4 kbps	Build 9 weather products		
	X				X	NWS			MCI	TRACON	SJU	TRACON		MDCRS, Eta, RUC		
LOUISVILLE (SDF)																
	X				X	TDWR	TDWR	WC	SDF	TDWR	SDF	TRACON	1.5 Mbps	base data		ASO
X					X	TDWR	TDWR	WE	SDF	TDWR	SDF	TRACON	9.6 kbps	data products		ASO
X					X	TDWR	TDWR	WC	SDF	TDWR	SDF	ATCT	9.6 kbps	weather products, display data		ASO
	X				X	ITWS			SDF	TRACON	SDF	ATCT	19.2 kbps	display data		ASO
X					X	ASR-9	ASR-9	WG	SDF	ASR-9	SDF	TRACON	9.6 kbps	weather products		ASO
	X				X	ITWS			SDF	TRACON	ZID	ARTCC	4.8 kbps, NFU(tbd), 19.2 kbps, 1.2 kbps, 1.2 kbps	ADAS, NFU, SD, rem site, ext user, RMMS, TWIP		ASO
	X				X	ITWS			SDF	TRACON	ZME	ARTCC	4.8 kbps	ADAS		ASO
	X				X	NEXRAD	NXRD	WA	SDF	NEXRAD	SDF	TRACON	14.4 kbps	Build 9 weather products		ASO
	X				X	NWS			MCI	TRACON	SDF	TRACON		MDCRS, Eta, RUC		ASO
OKLAHOMA CITY (OKC)																
	X				X	TDWR	TDWR	WC	OKC	TDWR	OKC	TRACON	1.5 Mbps	base data		ASW
X					X	TDWR	TDWR	WE	OKC	TDWR	OKC	TRACON	9.6 kbps	data products		ASW
X					X	TDWR	TDWR	WC	OKC	TDWR	OKC	ATCT	9.6 kbps	weather products, display data		ASW
	X				X	ITWS			OKC	TRACON	OKC	ATCT	19.2 kbps	display data		ASW
X					X	ASR-9	ASR-9	WG	OKC	ASR-9	OKC	TRACON	9.6 kbps	weather products		ASW
	X				X	ITWS			OKC	TRACON	ZFW	ARTCC	4.8 kbps, NFU(tbd), 19.2 kbps, 1.2 kbps, 1.2 kbps	ADAS, NFU, SD, rem site, ext user, RMMS, TWIP		ASW
	X				X	ITWS			OKC	TRACON	ZKC	ARTCC	4.8 kbps, 19.2 kbps	ADAS, SD, rem site, ext user		ASW
	X				X	NEXRAD	NXRD	WA	OKC	NEXRAD	OKC	TRACON	14.4 kbps	Build 9 weather products		ASW
	X				X	NWS			MCI	TRACON	OKC	TRACON		MDCRS, Eta, RUC		ASW
DAYTON (DAY)																
	X				X	TDWR	TDWR	WC	DAY	TDWR	DAY	TRACON	1.5 Mbps	base data		AGL
X					X	TDWR	TDWR	WE	DAY	TDWR	DAY	TRACON	9.6 kbps	data products		AGL
X					X	TDWR	TDWR	WC	DAY	TDWR	DAY	ATCT	9.6 kbps	weather products, display data		AGL
	X				X	ITWS			DAY	TRACON	DAY	ATCT	19.2 kbps	display data		AGL
X					X	ASR-9	ASR-9	WG	DAY	ASR-9	DAY	TRACON	9.6 kbps	weather products		AGL
	X				X	ITWS			DAY	TRACON	ZID	ARTCC	4.8 kbps, NFU(tbd), 19.2 kbps, 1.2 kbps, 1.2 kbps	ADAS, NFU, SD, rem site, ext user, RMMS, TWIP		AGL
	X				X	ITWS			DAY	TRACON	ZOB	ARTCC	4.8 kbps	ADAS		AGL
	X				X	ITWS			DAY	TRACON	ZAU	ARTCC	4.8 kbps	ADAS		AGL
	X				X	NEXRAD	NXRD	WA	CVG	NEXRAD	DAY	TRACON	14.4 kbps	Build 9 weather products		AGL
	X				X	NWS			MCI	TRACON	DAY	TRACON		MDCRS, Eta, RUC		AGL

APPENDIX B

ITWS TELECOMMUNICATIONS PROGRAM PLAN CONFIGURATION MANAGEMENT

B.1 Purpose

The purpose of this appendix is to define the procedures for managing any change to the ITWS Telecommunications Program Plan, with particular attention to Appendix A, ITWS Telecommunications Reqquirements.

B.1.1 Background

The Telecommunications Program Plan (TPP) documents the requirements, network design, telecommunications resources, and transition plan required to implement ITWS at thirty-four operational and three support facilities. The telecommunications requirements database, Appendix A, is presented in this plan as the requirements baseline for the ITWS implementation. All new telecommunications for this implementation will be fully identified, assessed, and validated. This process will allow for an optimum solution meeting the operational requirements and, where possible, allow prudent application of telecommunications services to take advantage of cost savings. The telecommunications configuration management process will not hinder the employment of services, but will provide an means to control changes and insure that only necessary n modifications are made tio the ITWS telecommunications plan.

B.2. Requirements Baseline

The initial telecommunications requirements, known as the baseline, are shown in Appendix A of this plan. This baseline represents the circuits required to identify existing circuit connectivities, new circuits to be added, and any circuits that will be deleted as a result of ITWS implementation. It is this baseline, Appendix A, that will come under the configuration management procedures outlined below. Future versions of the Telecommunication Program Plan (TPP) will contain updates to the requirements baseline as validated by the configuration management process.

B.3. Change Proposal Process

Any member of the ITWS Telecommunications Requirements Change Control Board (CCB) may propose a change to the requirements baseline, Appendix A. (This includes AXX-200/400/500/600, AXX-300/400, (etc.)). Changes are proposed by sending a Change Proposal (paragraph B.6) to AXX-???. AXX-??? will assign a change control number to the document, appoint an investigator, and send copies to the members of the ITWS CCB. Since it is the purpose of the configuration management control process to control change and not to create an administrative burden, this CCB will, under normal circumstances, operate via facsimile, e-mail, and telephone. That is, responses to the proposed change(s) will be faced or called in to AXX-??? within ten working days. These responses will be given to the change investigator, who will then include them as part of his/her report. Within ten working days after receipt of the investigator's report, each member will fax, e-mail or telephone a response to AXX-??? is his/her opinion of the issues involved in the proposed change has changed since he/her has read the investigator's report. Silence indicates consent. Results will then be presented by the investigator to the ITWS Telecommunications Working Group (?). The TWG will address any unresolved issues and make a determination on the proposed change. The minutes of the TWG will reflect any issues concerning the proposed change, as well as the resolution of those issues and the approval/disapproval of the change. The change will be implemented by AXX-???.

Some of the change proposals submitted and approved may impact or cause changes to other sections of the TPP. Proposed changes to the plan itself, which do not affect the database or are caused by approved changes to Appendix A, may be submitted using the format in Figure B-7.

B.4. Investigating a Proposed Change

AXX-??? will designate an investigator for every proposed change to the Requirements database. The investigator's report will include a summary of the proposed change; the originator's name and organization; the classification of the change (i.e. type 1 or Type 2, paragraph F.5.); the impact upon costs, schedules, other programs; and recommendation for action on the change.

B.5. Types of Change

There are two categories of changes: Type 1 and Type 2. A Type 1 change affects the baseline, impacts costs or schedules, or affects safety. A Type 2 change affects no baseline and has negligible cost, schedule or other impact.

B.6. The Change Proposal

DRAW FORM

B.7. Change Control Process

The change control process for maintaining and controlling change in the TPP and the ITWS Baseline Requirements is summarized in Figure B-7.

DRAW FIGURE B-7

APPENDIX C

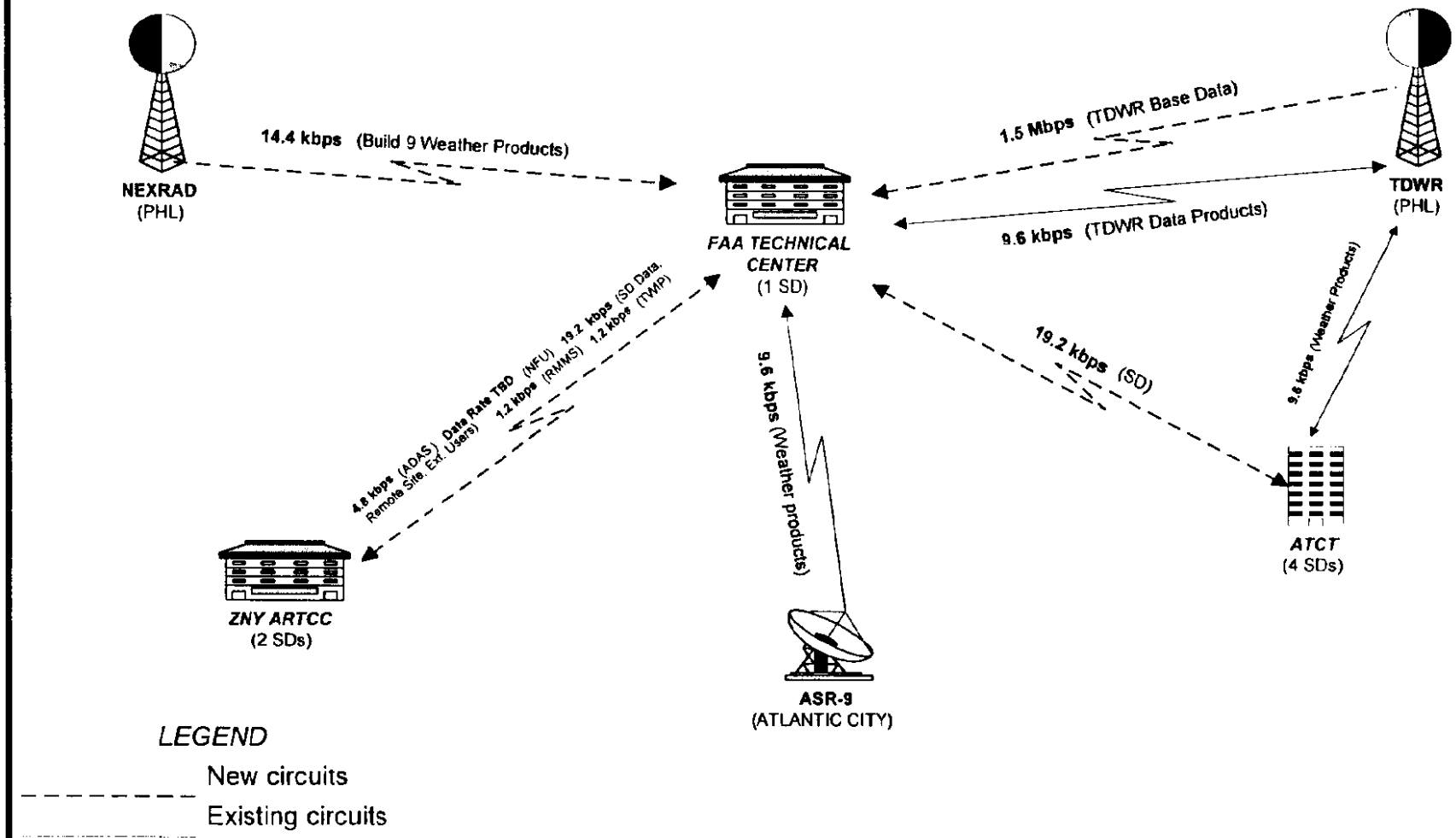
INTEGRATED TERMINAL WEATHER SYSTEM (ITWS) SITE INSTALLATION FUNCTIONAL DIAGRAMS

- **FAA Service Support Facilities Functional ITWS Architecture**
  - FAA Technical Center
  - Program Support Facility
  - FAA Academy

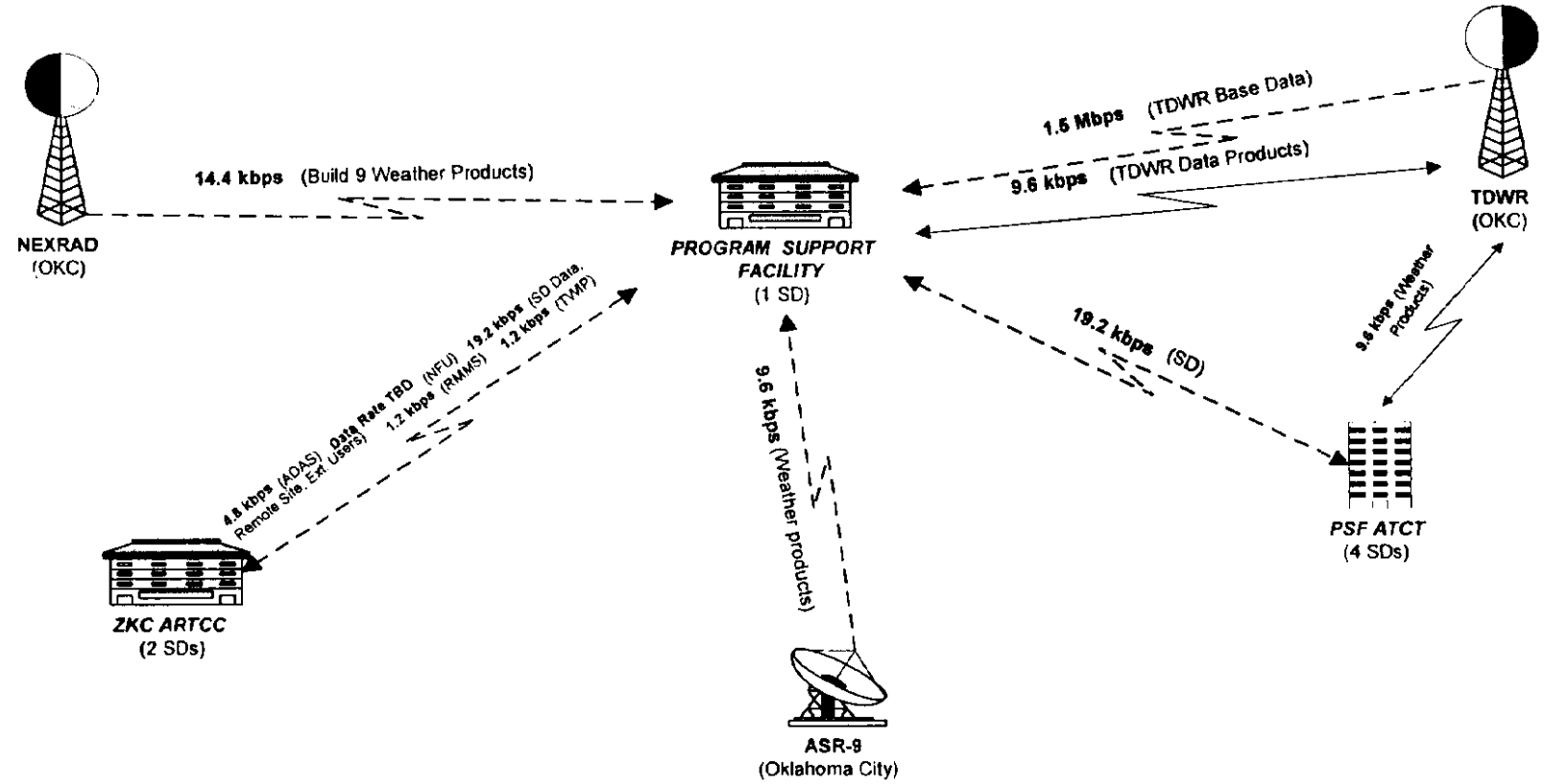
- **FAA Operational Facilities Functional ITWS Architecture**

1. Atlanta TRACON	(ATL)	
2. Boston TRACON	(A90)	
3. Charlotte TRACON	(CLT)	
4. Chicago TRACON	(C90)	
5. Cleveland TRACON	(CLE)	
6. Columbus TRACON	(CMH)	
7. Covington/Cincinnati TRACON	(CVG)	
8. Dallas/Ft.Worth TRACON	(DFW)	
9. Dayton TRACON	(DAY)	
10. Denver TRACON	(D84)	
11. Detroit/Wayne TRACON	(DFW)	
12. Houston Tower & TRACON	(IAH & HOU)	
13. Indianapolis TRACON	(IND)	
14. Kansas City TRACON	(MCI)	
15. Las Vegas		To Be Added
16. Louisville TRACON	(SDF)	
17. Memphis TRACON	(MEM)	
18. Miami TRACON	(MIA)	
19. Minneapolis TRACON	(M98)	
20. Nashville TRACON	(BNA)	
21. New Orleans TRACON	(MSV)	
22. Oklahoma City TRACON	(OKC)	
23. Orlando TRACON	(MCO)	
24. Philadelphia TRACON	(PHL)	
25. Phoenix TRACON	(PHX)	
26. Pittsburgh TRACON	(PIT)	
27. Raleigh-Durham TRACON	(RDU)	
28. St.Louis TRACON	(STL/T75)	
29. Salt Lake City TRACON	(S56)	
30. San Juan TRACON	(SJU)	
31. Tulsa TRACON	(TUL)	
32. Washington TRACON	(IAD)	
33. Wichita TRACON	(ICT)	

FAA TECHNICAL CENTER (FAATC) FUNCTIONAL ITWS ARCHITECTURE



PROGRAM SUPPORT FACILITY (PSF) FUNCTIONAL ITWS ARCHITECTURE

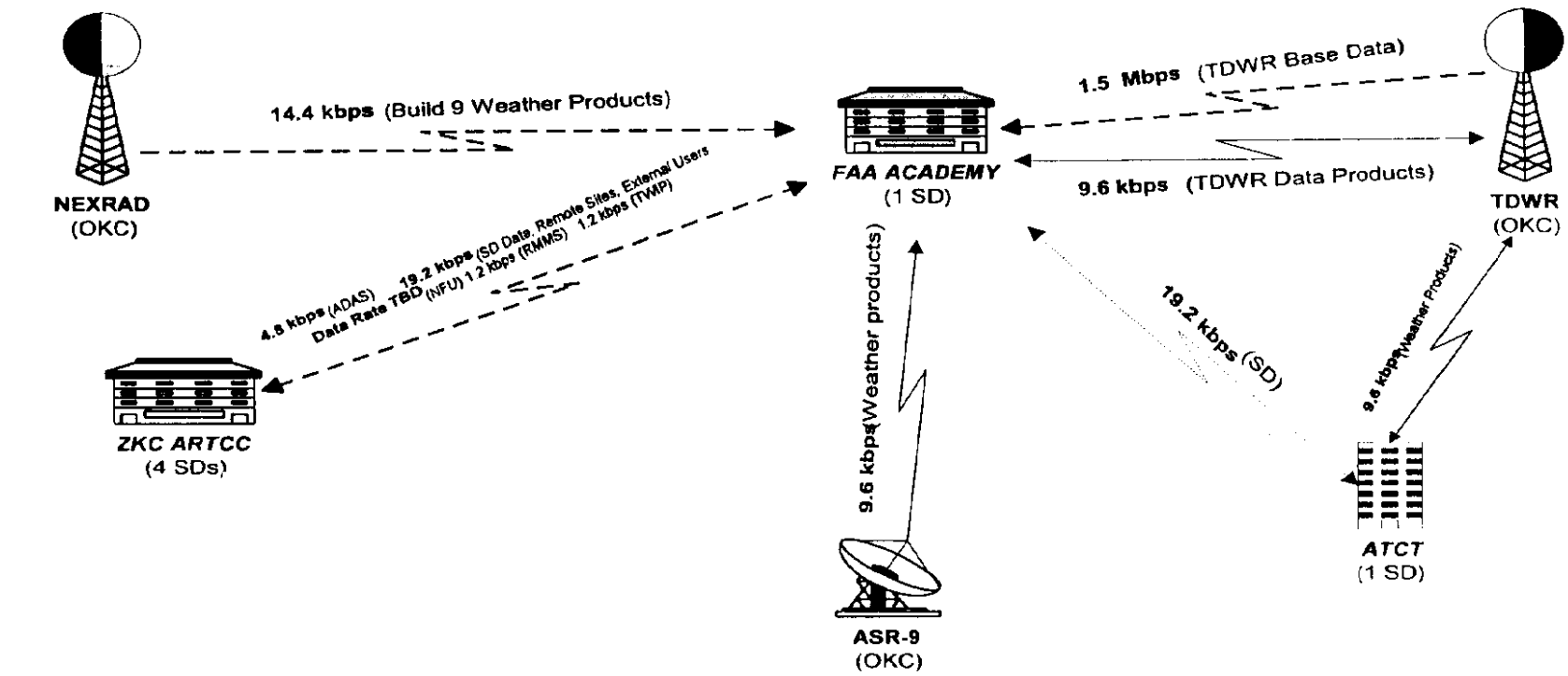


LEGEND

New circuits

Existing service

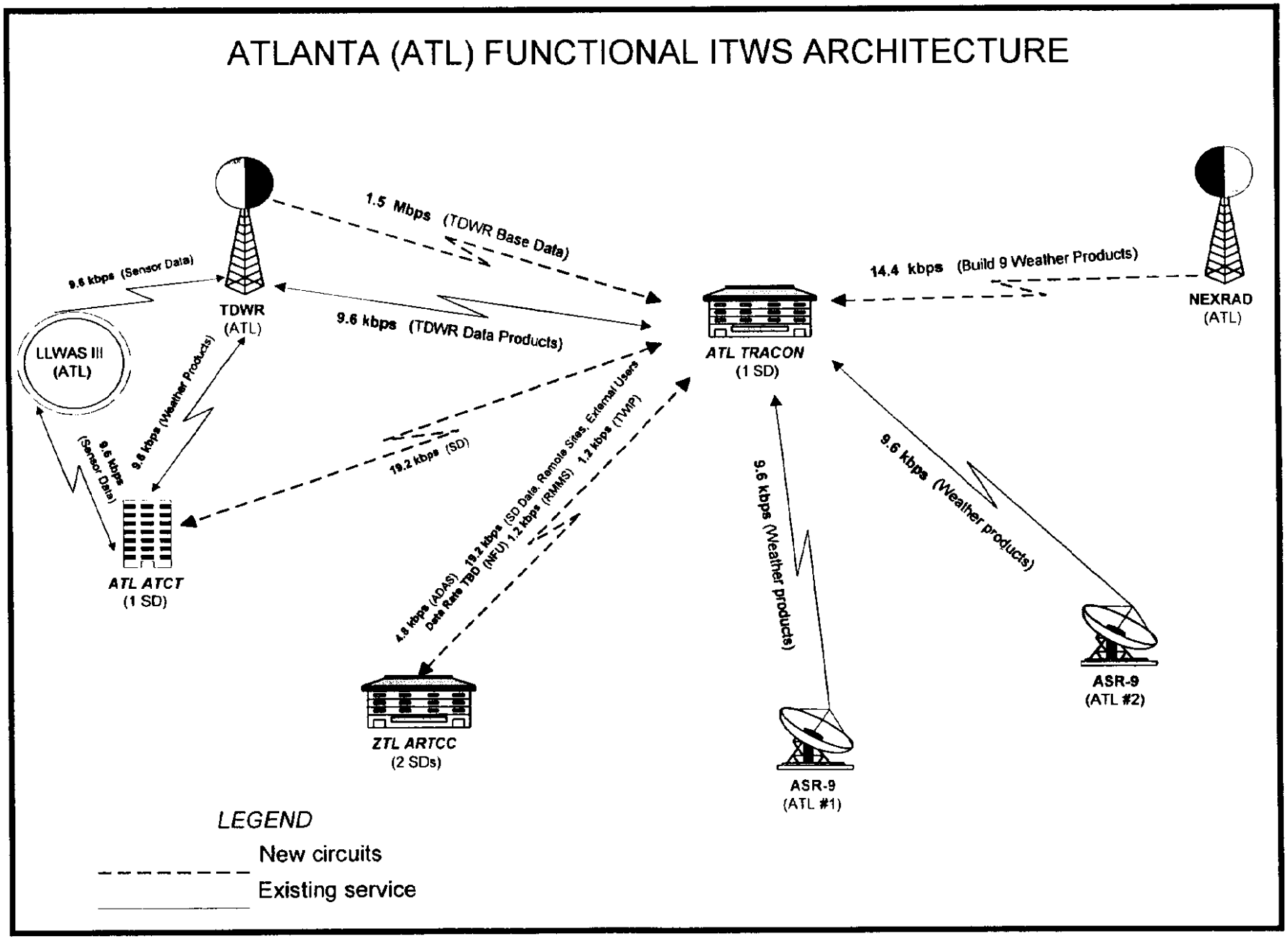
FAA ACADEMY FUNCTIONAL ITWS ARCHITECTURE

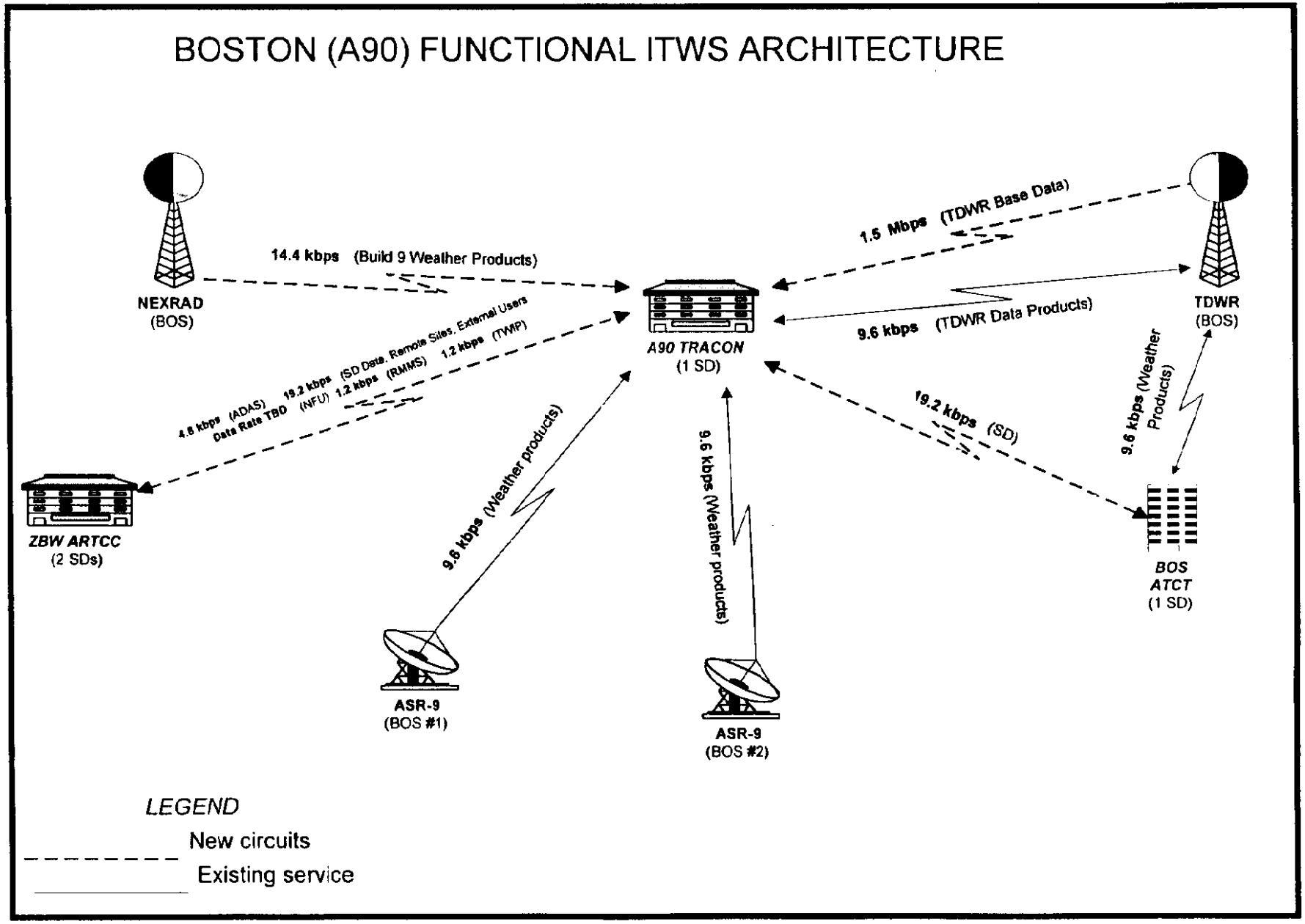


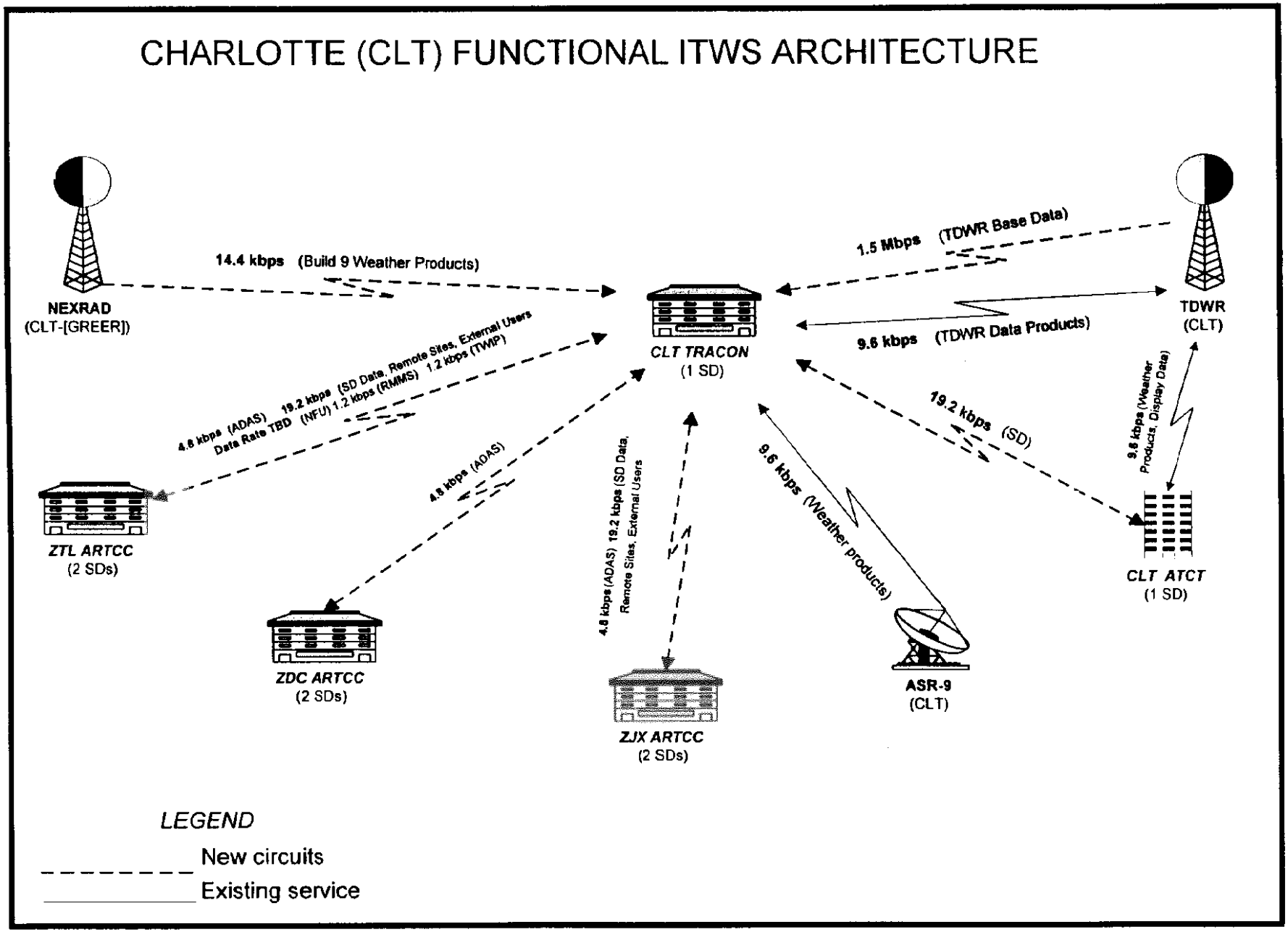
LEGEND

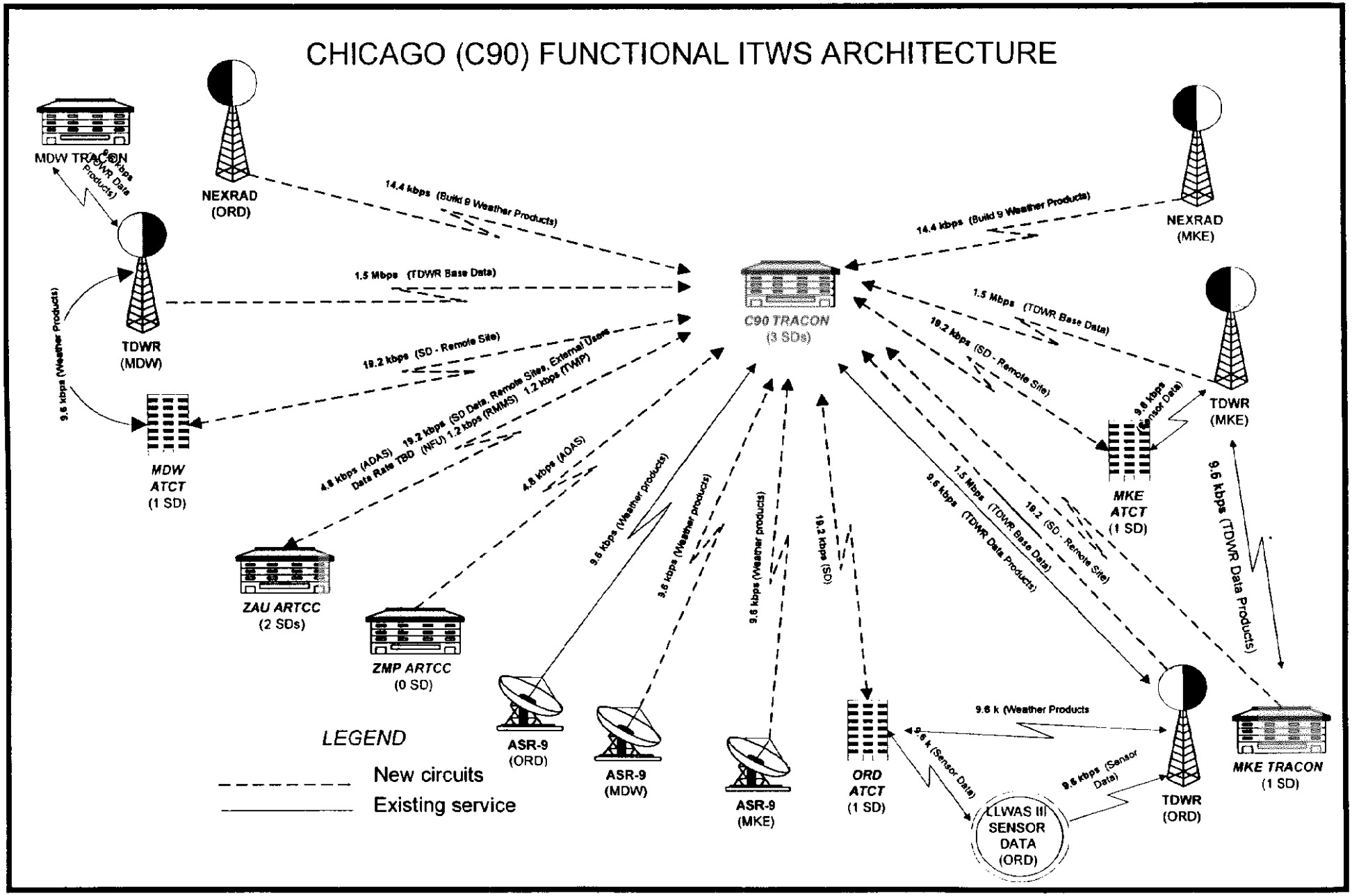
- - - - - - - - New circuits

———————— Existing service

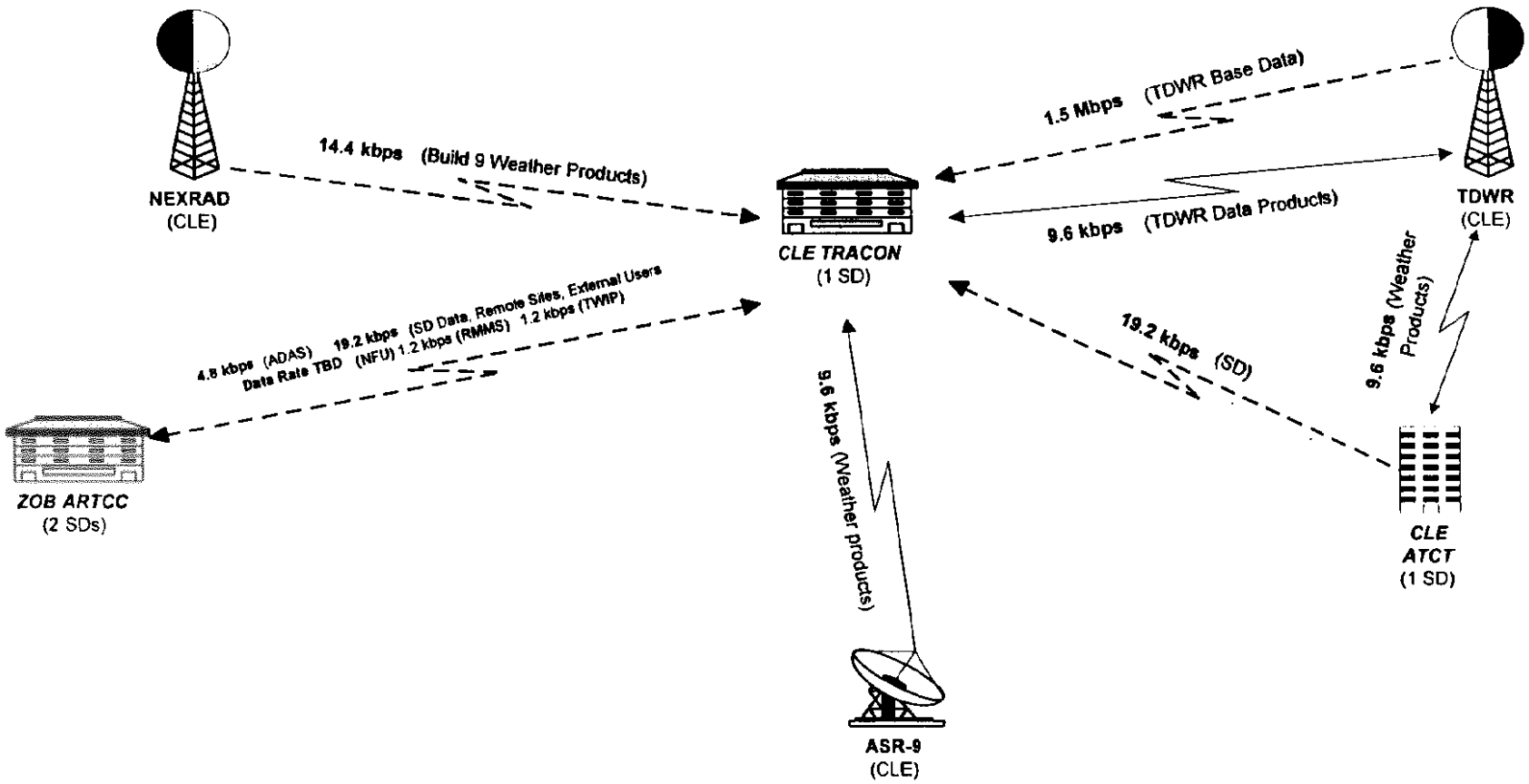

ATLANTA (ATL) FUNCTIONAL ITWS ARCHITECTURE
1.5 Mbps (TDWR Base Data)
9.6 kbps (Sensor Data)
TDWR
(ATL)
9.6 kbps (TDWR Data Products)
14.4 kbps (Build 9 Weather Products)
NEXRAD
(ATL)
LLWAS III
(ATL)
9.6 kbps (Weather Products)
ATL TRACON
(1 SD)
9.6 kbps (Sensor Data)
19.2 kbps (SD)
4.8 kbps (ADAS)
19.2 kbps (SD Data, Remote Sites, External Users
Data Rate TBD (NFU) 1.2 kbps (RMMS) 1.2 kbps (TWIP)
9.6 kbps (Weather products)
9.6 kbps (Weather products)
ATL ATCT
(1 SD)
ZTL ARTCC
(2 SDs)
ASR-9
(ATL #1)
ASR-9
(ATL #2)
LEGEND
New circuits
Existing service


BOSTON (A90) FUNCTIONAL ITWS ARCHITECTURE
NEXRAD
(BOS)
14.4 kbps (Build 9 Weather Products)
1.5 Mbps (TDWR Base Data)
TDWR
(BOS)
9.6 kbps (TDWR Data Products)
A90 TRACON
(1 SD)
4.8 kbps (ADAS)
Data Rate TBD (NFU)
19.2 kbps (SD Data, Remote Sites, External Users
1.2 kbps (RMMS)
1.2 kbps (TWIP)
9.6 kbps (Weather products)
9.6 kbps (Weather products)
19.2 kbps (SD)
9.6 kbps (Weather Products)
ZBW ARTCC
(2 SDs)
ASR-9
(BOS #1)
ASR-9
(BOS #2)
BOS
ATCT
(1 SD)
LEGEND
New circuits
Existing service


CHARLOTTE (CLT) FUNCTIONAL ITWS ARCHITECTURE
NEXRAD
(CLT-[GREER])
14.4 kbps (Build 9 Weather Products)
CLT TRACON
(1 SD)
1.5 Mbps (TDWR Base Data)
9.6 kbps (TDWR Data Products)
TDWR
(CLT)
4.8 kbps (ADAS) 19.2 kbps (SD Data, Remote Sites, External Users
Data Rate TBD (NFU) 1.2 kbps (RMMS) 1.2 kbps (TWIP)
4.8 kbps (ADAS)
19.2 kbps (SD)
9.6 kbps (Weather Products, Display Data)
ZTL ARTCC
(2 SDs)
ZDC ARTCC
(2 SDs)
4.8 kbps (ADAS) 19.2 kbps (SD Data, Remote Sites, External Users
ZJX ARTCC
(2 SDs)
9.6 kbps (Weather products)
ASR-9
(CLT)
CLT ATCT
(1 SD)
LEGEND
New circuits
Existing service


CHICAGO (C90) FUNCTIONAL ITWS ARCHITECTURE
MDW TRACON
9.6 kbps (TDWR Data Products)
NEXRAD (ORD)
14.4 kbps (Build 9 Weather Products)
1.5 Mbps (TDWR Base Data)
9.6 kbps (Weather Products)
TDWR (MDW)
19.2 kbps (SD - Remote Site)
4.8 kbps (ADAS)
19.2 kbps (SD Data, Remote Sites, External Users
Data Rate TBD (NFU) 1.2 kbps (RMMS) 1.2 kbps (TWP)
4.8 kbps (ADAS)
MDW ATCT (1 SD)
ZAU ARTCC (2 SDs)
ZMP ARTCC (0 SD)
9.6 kbps (Weather products)
9.6 kbps (Weather products)
9.6 kbps (Weather products)
19.2 kbps (SD)
C90 TRACON (3 SDs)
14.4 kbps (Build 9 Weather Products)
NEXRAD (MKE)
1.5 Mbps (TDWR Base Data)
19.2 kbps (SD - Remote Site)
9.6 kbps (Sensor Data)
TDWR (MKE)
MKE ATCT (1 SD)
9.6 kbps (TDWR Data Products)
1.5 Mbps (TDWR Base Data)
9.6 kbps (TDWR Data Products)
19.2 (SD - Remote Site)
ASR-9 (ORD)
ASR-9 (MDW)
ASR-9 (MKE)
ORD ATCT (1 SD)
9.6 k (Weather Products
9.6 k (Sensor Data)
9.6 kbps (Sensor Data)
LLWAS III SENSOR DATA (ORD)
TDWR (ORD)
MKE TRACON (1 SD)
LEGEND
New circuits
Existing service

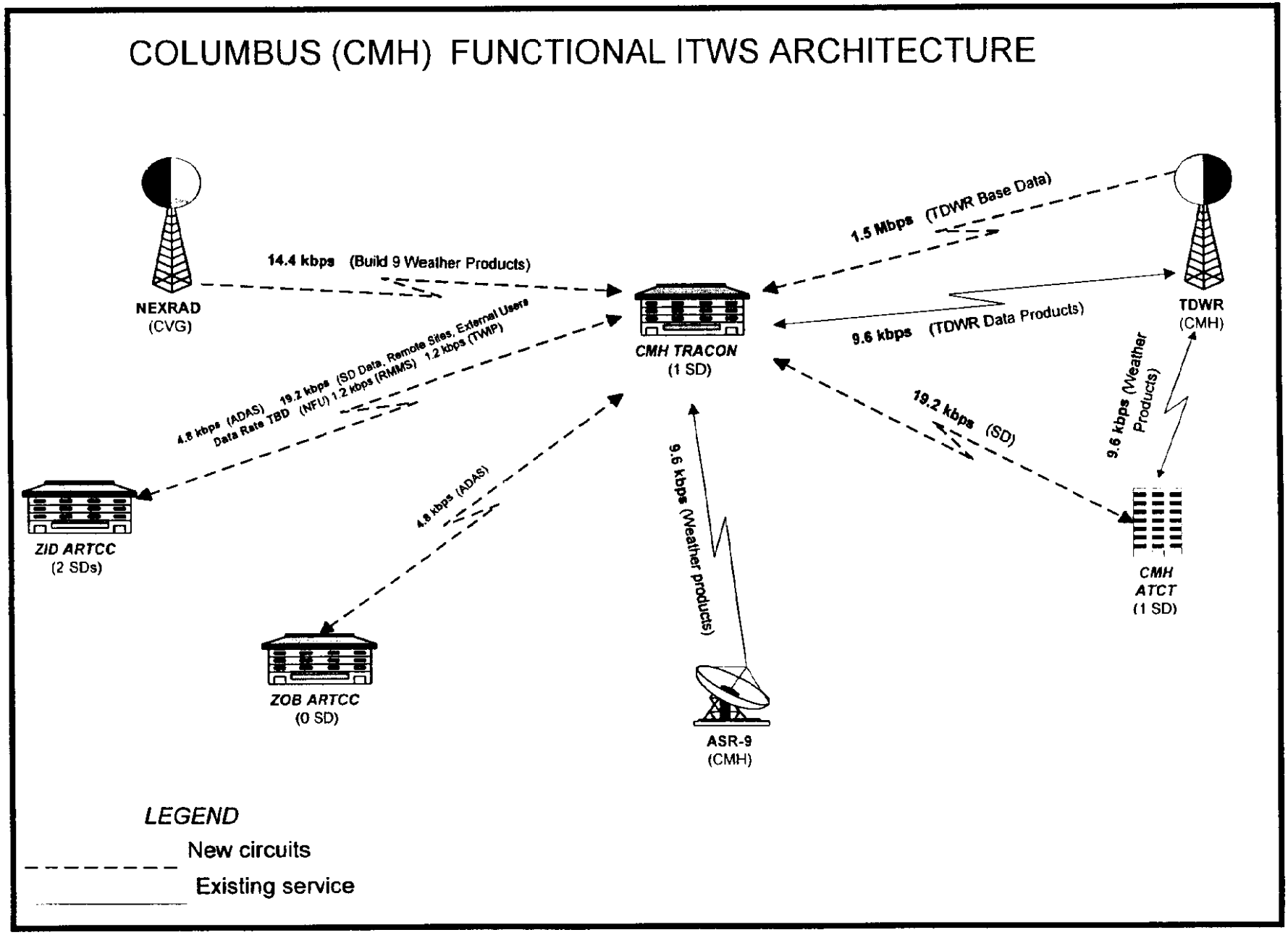
CLEVELAND (CLE) FUNCTIONAL ITWS ARCHITECTURE

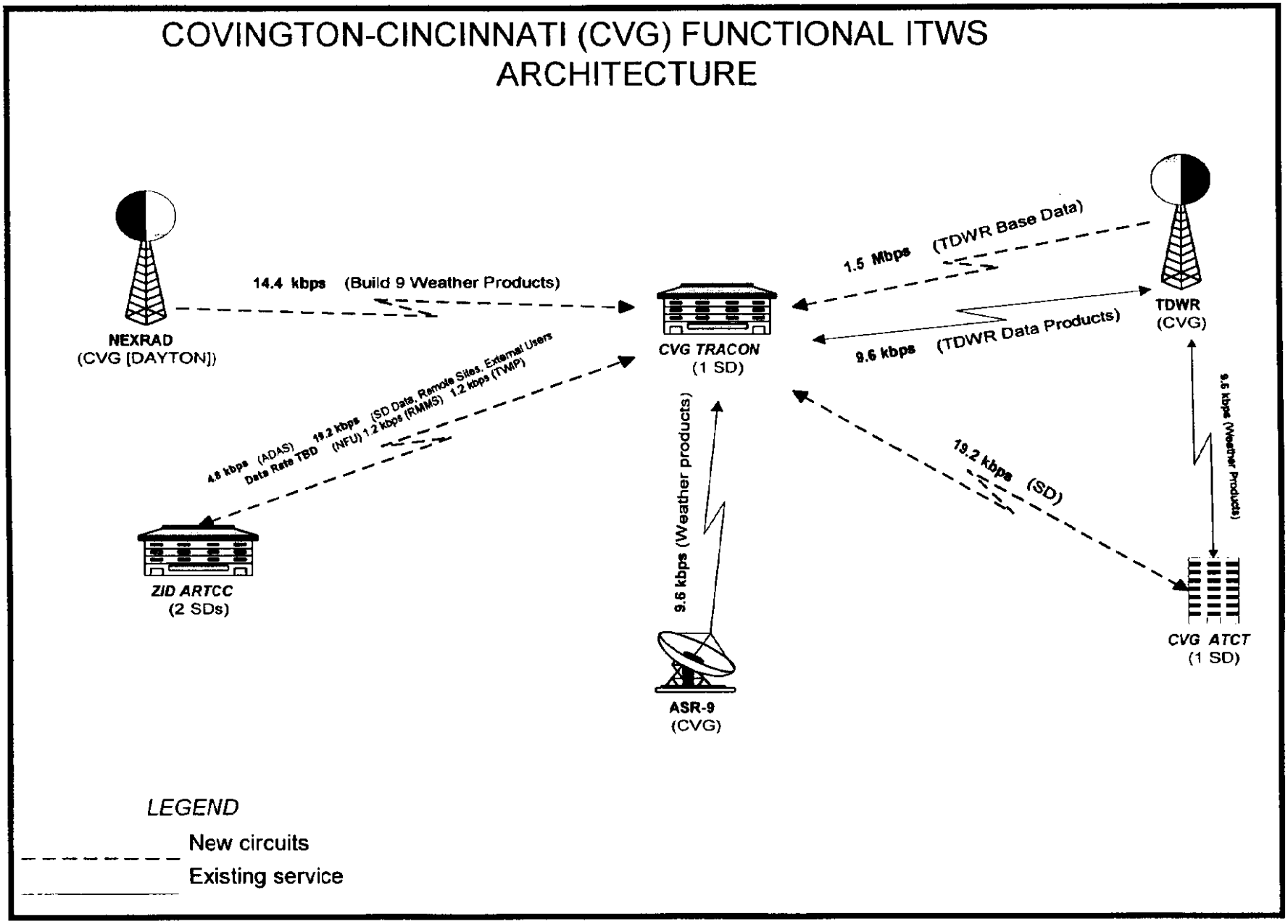


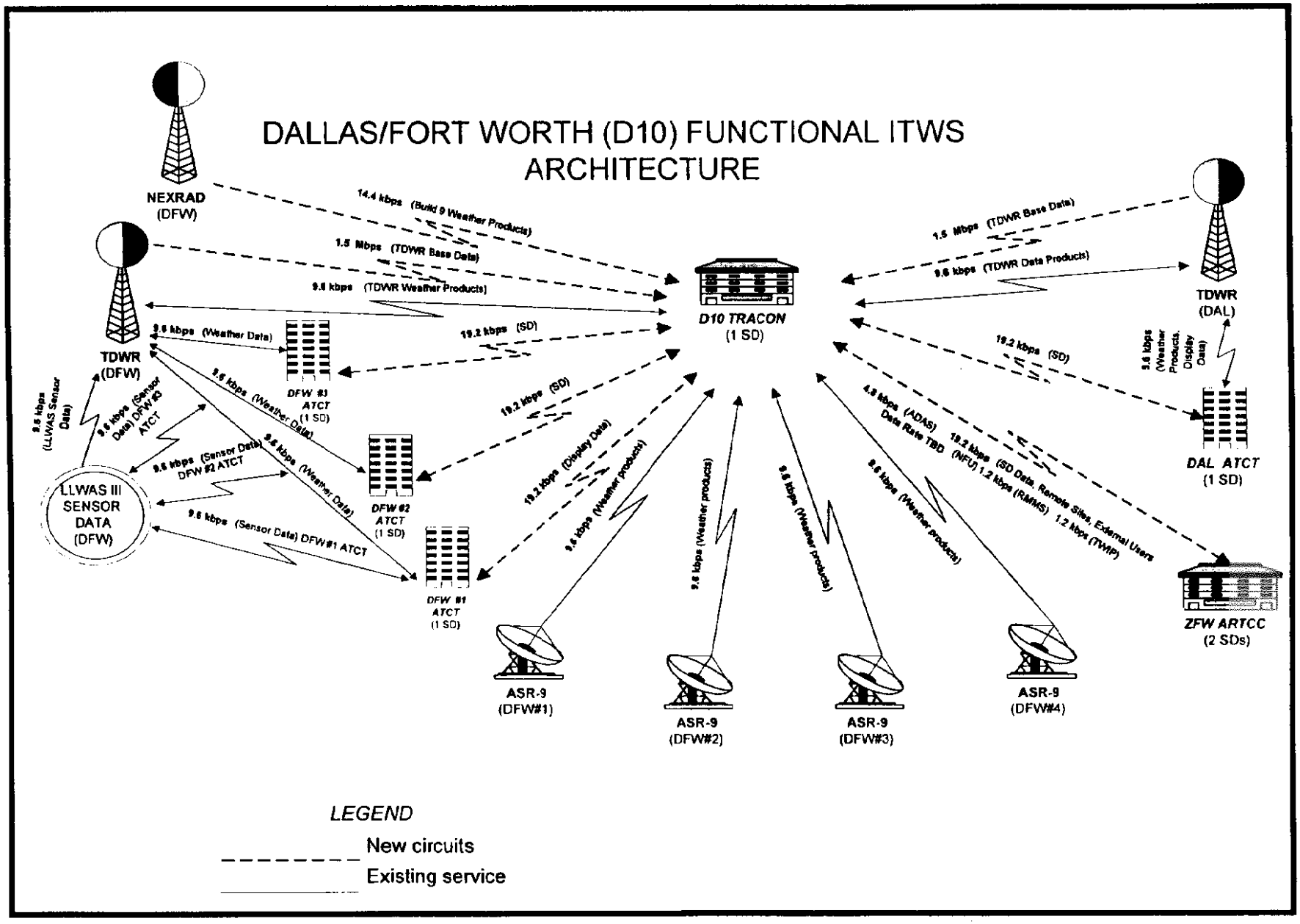
LEGEND

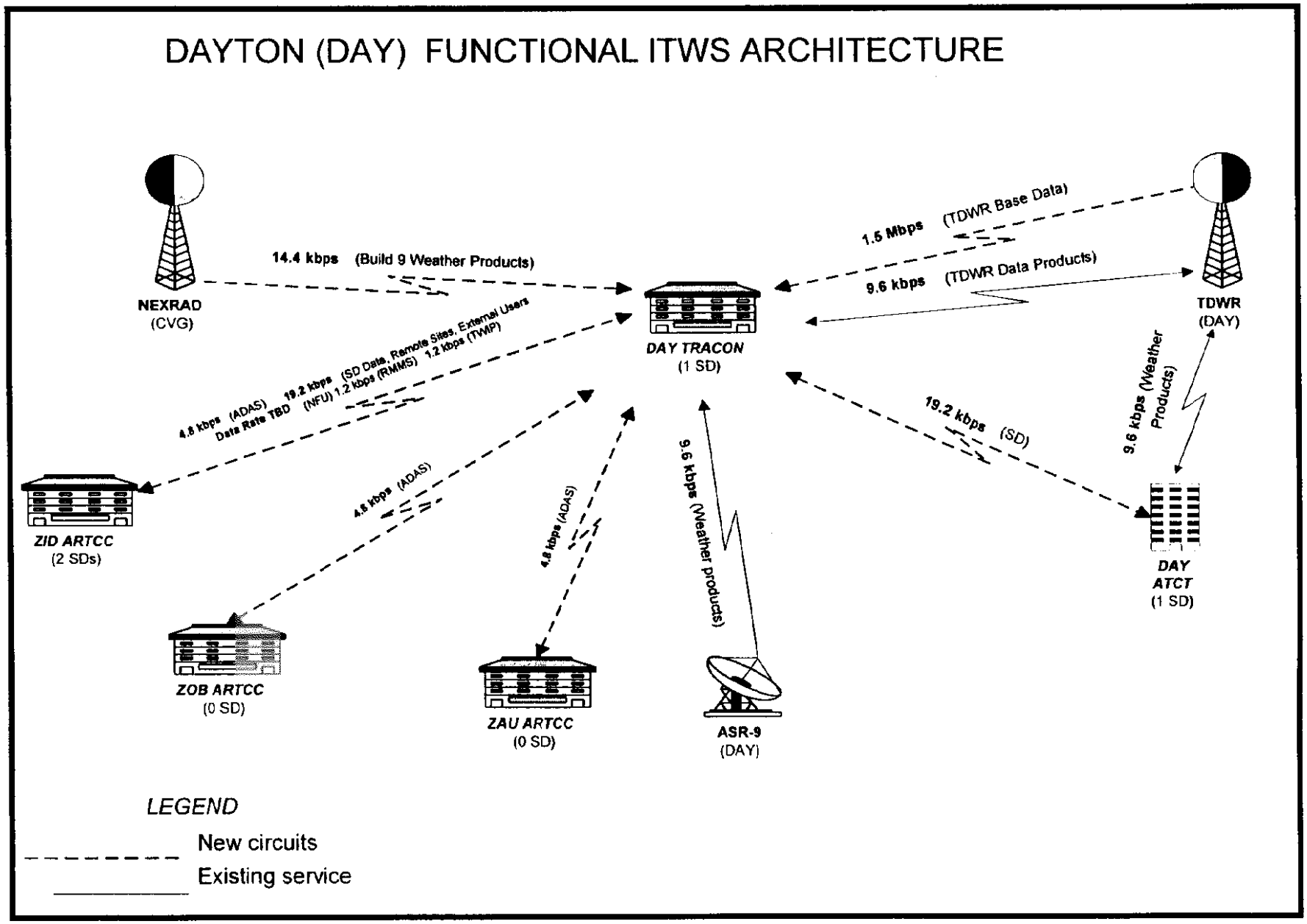
New circuits

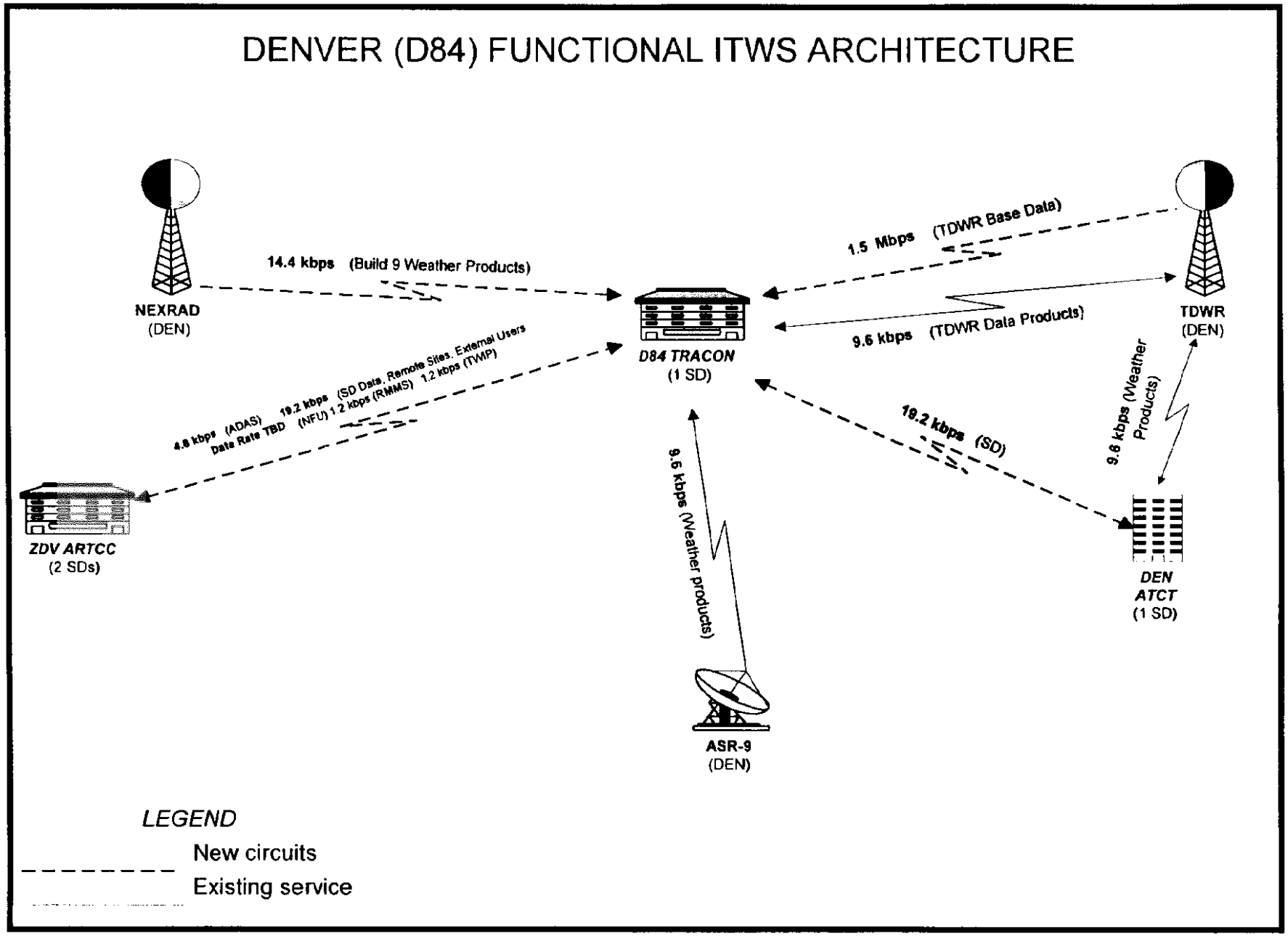
Existing service


COLUMBUS (CMH) FUNCTIONAL ITWS ARCHITECTURE
NEXRAD
(CVG)
14.4 kbps (Build 9 Weather Products)
1.5 Mbps (TDWR Base Data)
TDWR
(CMH)
CMH TRACON
(1 SD)
9.6 kbps (TDWR Data Products)
4.8 kbps (ADAS) 19.2 kbps (SD Data, Remote Sites, External Users
Data Rate TBD (NFU) 1.2 kbps (RMMS) 1.2 kbps (TWP)
19.2 kbps (SD)
9.6 kbps (Weather Products)
ZID ARTCC
(2 SDs)
4.8 kbps (ADAS)
9.6 kbps (Weather products)
CMH
ATCT
(1 SD)
ZOB ARTCC
(0 SD)
ASR-9
(CMH)
LEGEND
New circuits
Existing service

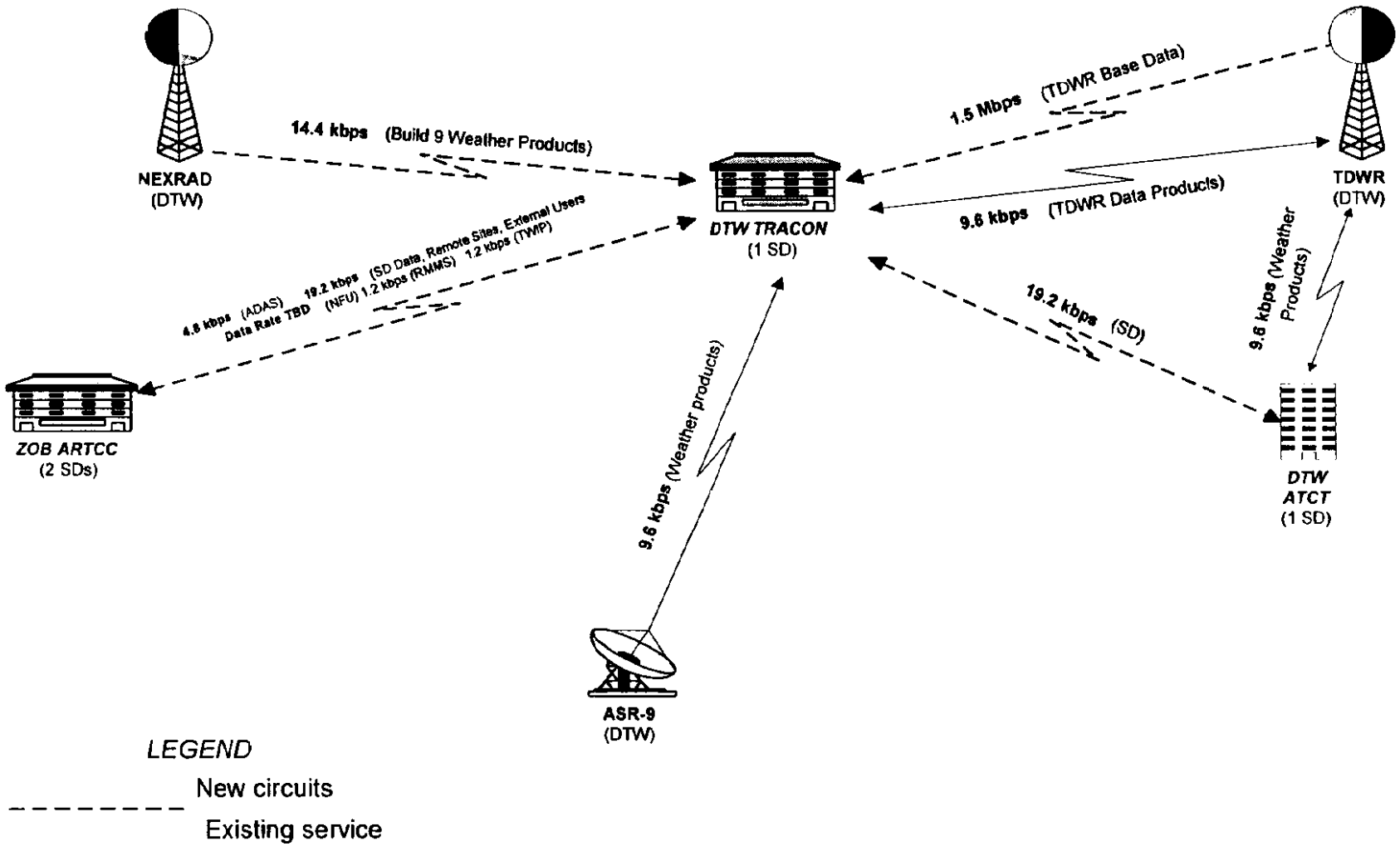

COVINGTON-CINCINNATI (CVG) FUNCTIONAL ITWS ARCHITECTURE
NEXRAD
(CVG [DAYTON])
14.4 kbps (Build 9 Weather Products)
CVG TRACON
(1 SD)
1.5 Mbps (TDWR Base Data)
9.6 kbps (TDWR Data Products)
TDWR
(CVG)
9.6 kbps (Weather Products)
4.8 kbps (ADAS)
Data Rate TBD
19.2 kbps (SD Data, Remote Sites, External Users (NFU) 1.2 kbps (RMMS) 1.2 kbps (TWIP)
ZID ARTCC
(2 SDs)
9.6 kbps (Weather products)
ASR-9
(CVG)
19.2 kbps (SD)
CVG ATCT
(1 SD)
LEGEND
New circuits
Existing service

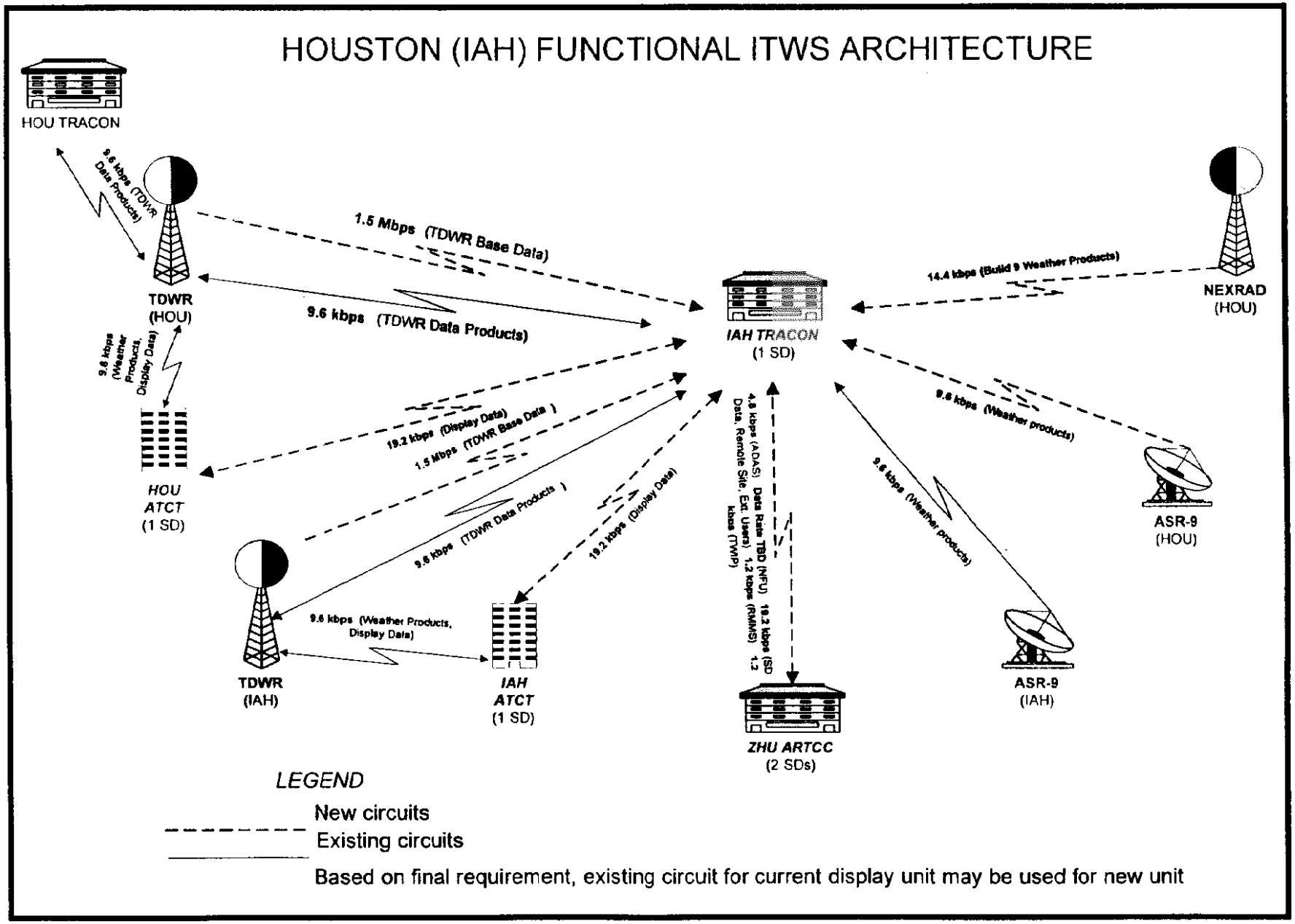

DALLAS/FORT WORTH (D10) FUNCTIONAL ITWS ARCHITECTURE
NEXRAD (DFW)
TDWR (DFW)
TDWR (DAL)
D10 TRACON (1 SD)
DFW #3 ATCT (1 SD)
DFW #2 ATCT (1 SD)
DFW #1 ATCT (1 SD)
DAL ATCT (1 SD)
ZFW ARTCC (2 SDs)
LLWAS III SENSOR DATA (DFW)
ASR-9 (DFW#1)
ASR-9 (DFW#2)
ASR-9 (DFW#3)
ASR-9 (DFW#4)
14.4 kbps (Build 9 Weather Products)
1.5 Mbps (TDWR Base Data)
9.6 kbps (TDWR Weather Products)
9.6 kbps (Weather Data)
19.2 kbps (SD)
9.6 kbps (LLWAS Sensor Data)
9.6 kbps (Sensor Data) DFW #3 ATCT
9.6 kbps (Sensor Data) DFW #2 ATCT
9.6 kbps (Sensor Data) DFW #1 ATCT
9.6 kbps (Weather Data)
19.2 kbps (Display Data)
9.6 kbps (Weather products)
1.5 Mbps (TDWR Base Data)
9.6 kbps (TDWR Data Products)
9.6 kbps (Weather Products, Display Data)
4.8 kbps (ADAS) Data Rate TBD
19.2 kbps (SD Data, Remote Sites, External Users) (NFU) 1.2 kbps (RAMS) 1.2 kbps (TWIP)
LEGEND
New circuits
Existing service

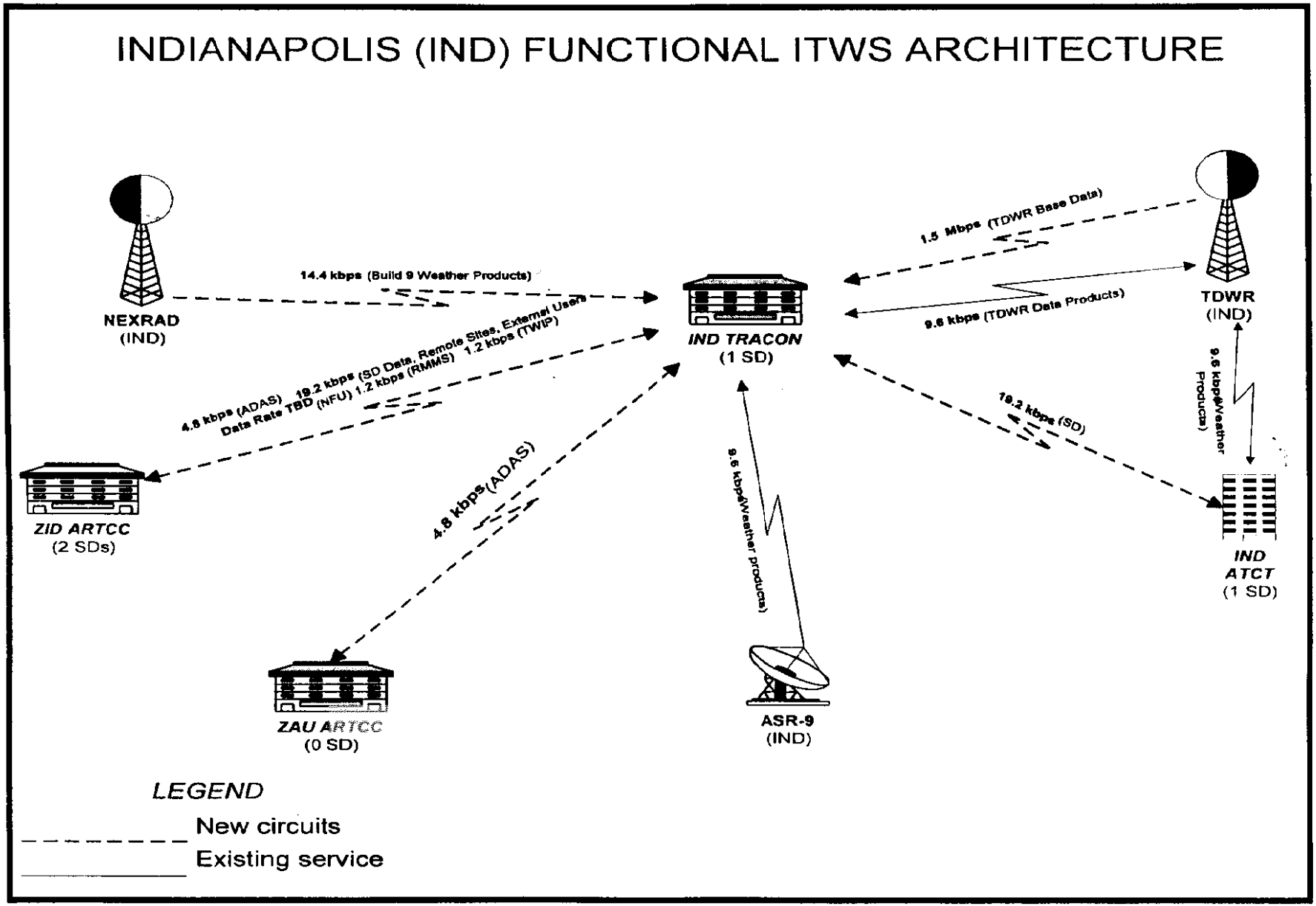

DAYTON (DAY) FUNCTIONAL ITWS ARCHITECTURE
NEXRAD
(CVG)
14.4 kbps (Build 9 Weather Products)
1.5 Mbps (TDWR Base Data)
9.6 kbps (TDWR Data Products)
TDWR
(DAY)
DAY TRACON
(1 SD)
4.8 kbps (ADAS)
Data Rate TBD
19.2 kbps (SD Data, Remote Sites, External Users
(NFU) 1.2 kbps (RMMS) 1.2 kbps (TWIP)
19.2 kbps (SD)
9.6 kbps (Weather Products)
ZID ARTCC
(2 SDs)
4.8 kbps (ADAS)
4.8 kbps (ADAS)
9.6 kbps (Weather products)
DAY
ATCT
(1 SD)
ZOB ARTCC
(0 SD)
ZAU ARTCC
(0 SD)
ASR-9
(DAY)
LEGEND
New circuits
Existing service

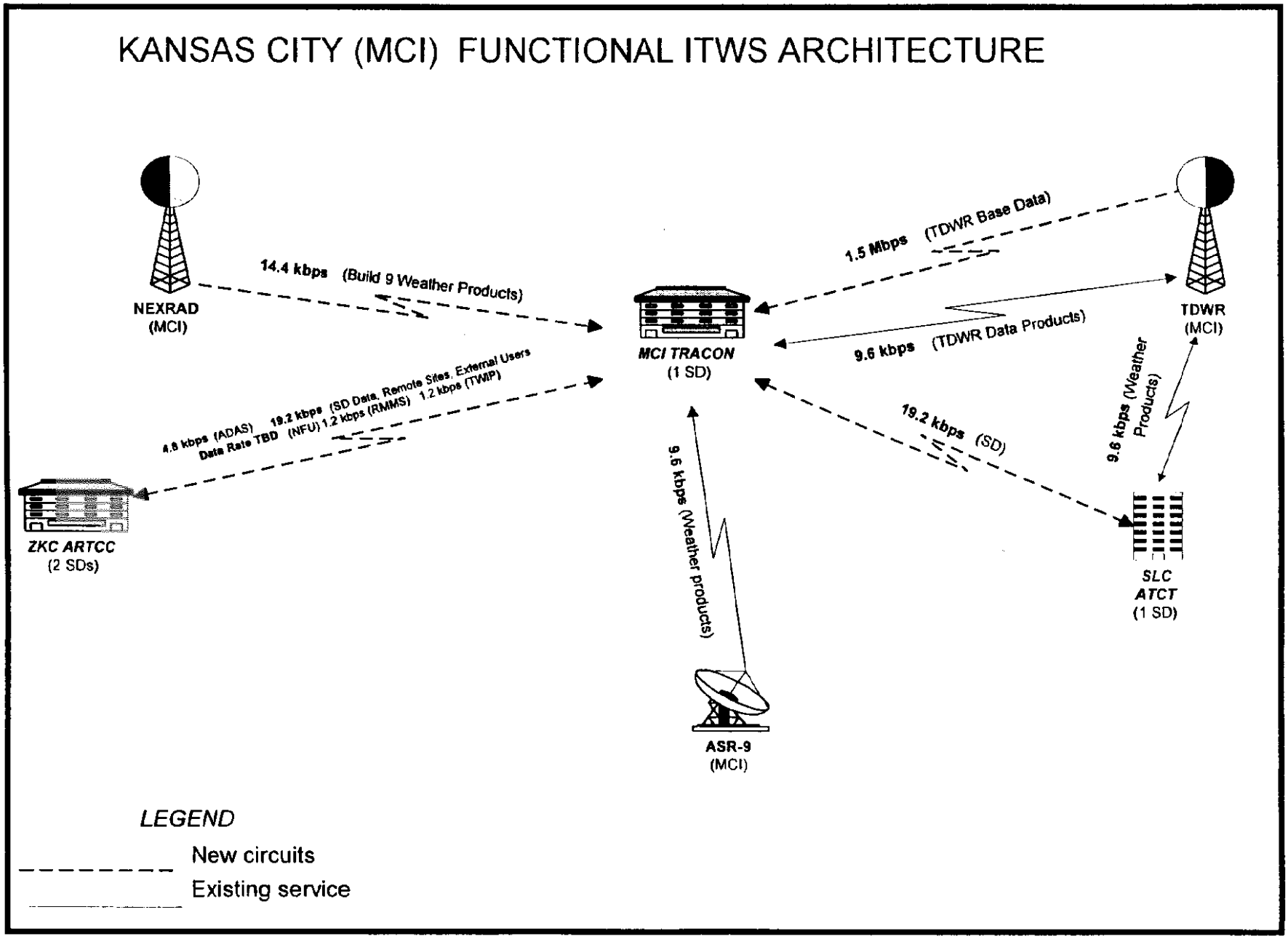

DENVER (D84) FUNCTIONAL ITWS ARCHITECTURE
NEXRAD
(DEN)
14.4 kbps (Build 9 Weather Products)
1.5 Mbps (TDWR Base Data)
TDWR
(DEN)
9.6 kbps (TDWR Data Products)
D84 TRACON
(1 SD)
4.8 kbps (ADAS) 19.2 kbps (SD Data, Remote Sites, External Users
Data Rate TBD (NFU) 1.2 kbps (RMMS) 1.2 kbps (TWIP)
9.6 kbps (Weather Products)
19.2 kbps (SD)
ZDV ARTCC
(2 SDs)
9.6 kbps (Weather products)
DEN
ATCT
(1 SD)
ASR-9
(DEN)
LEGEND
New circuits
Existing service

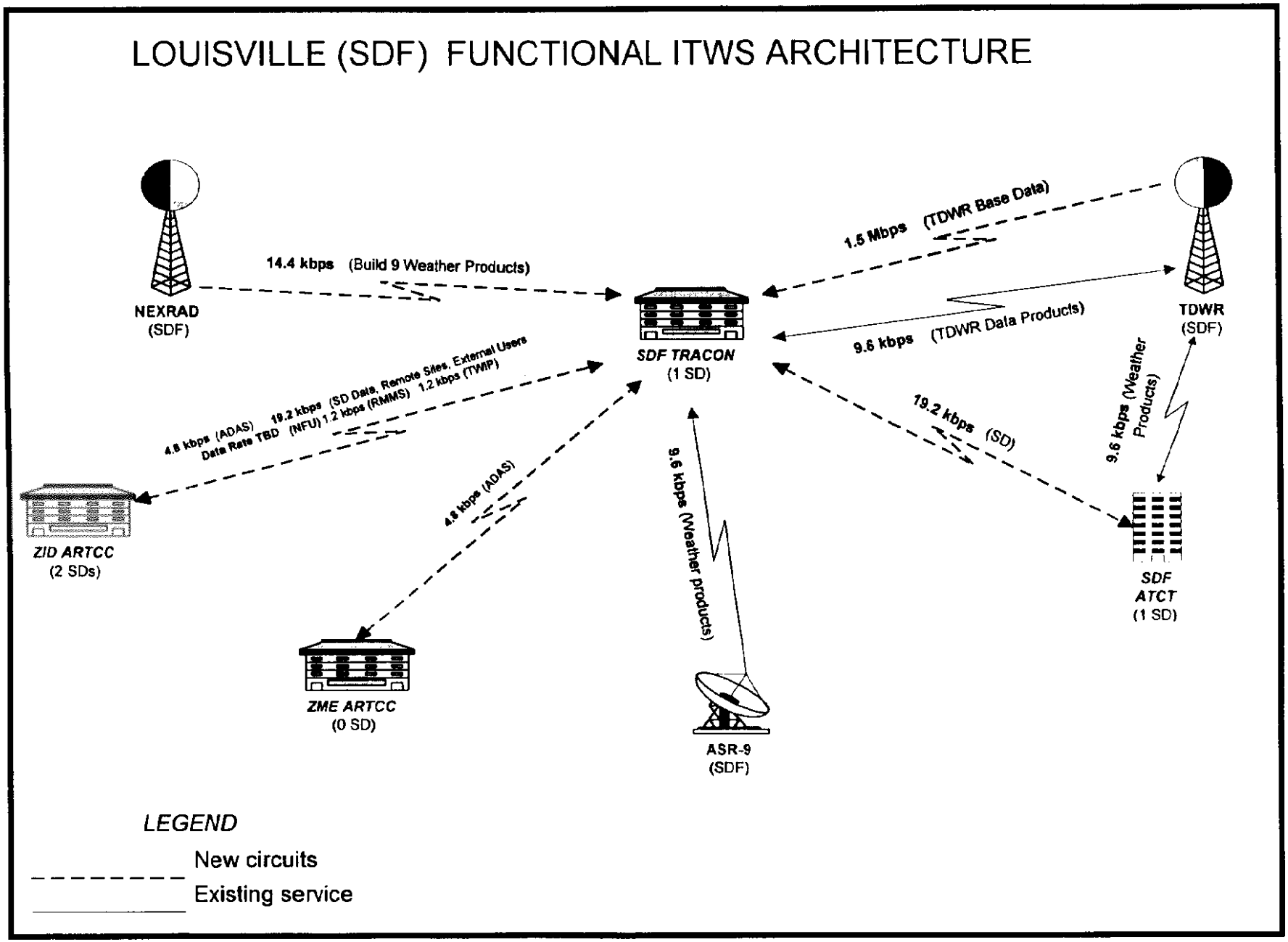
DETROIT/WAYNE (DTW) FUNCTIONAL ITWS ARCHITECTURE

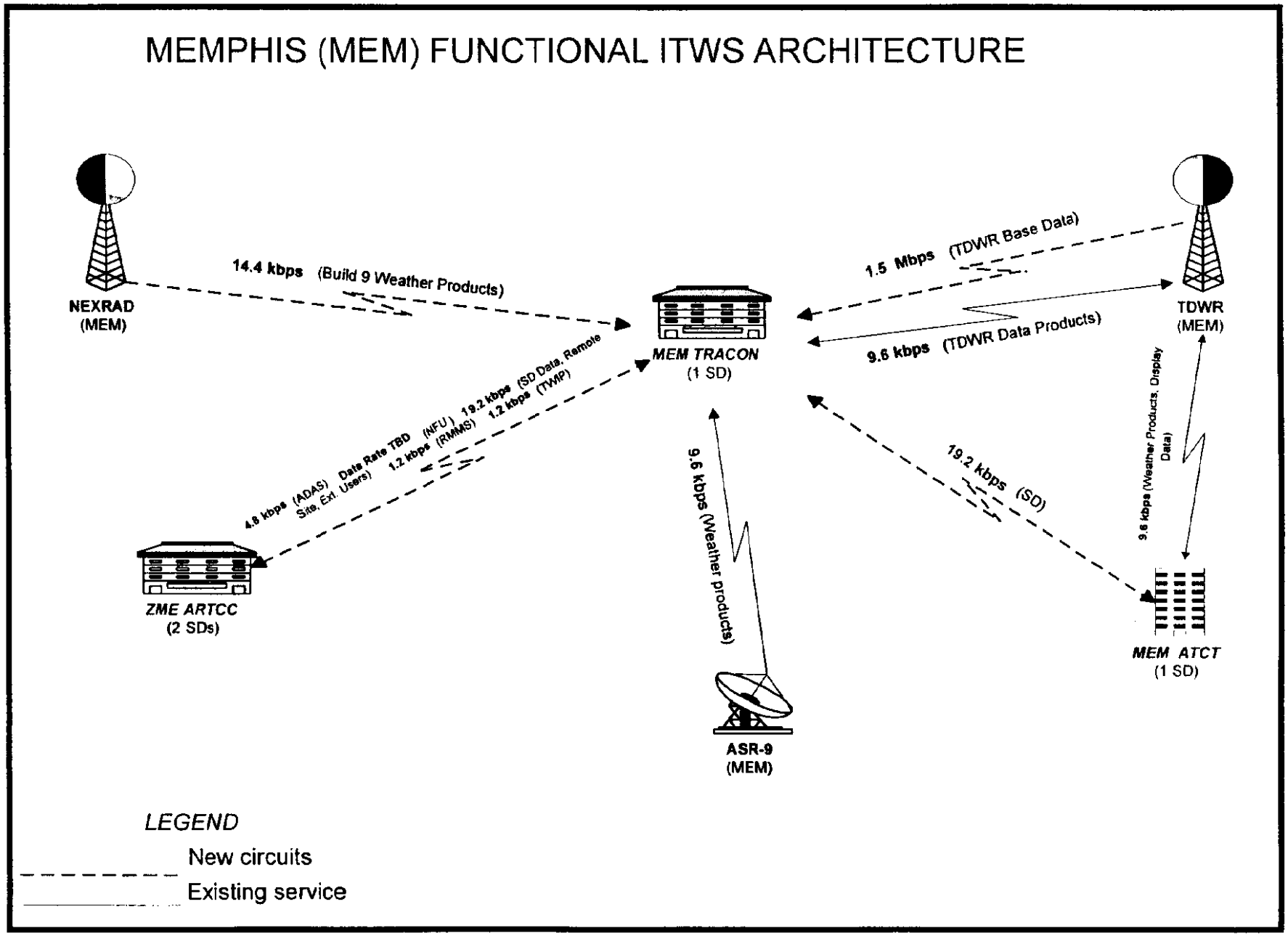


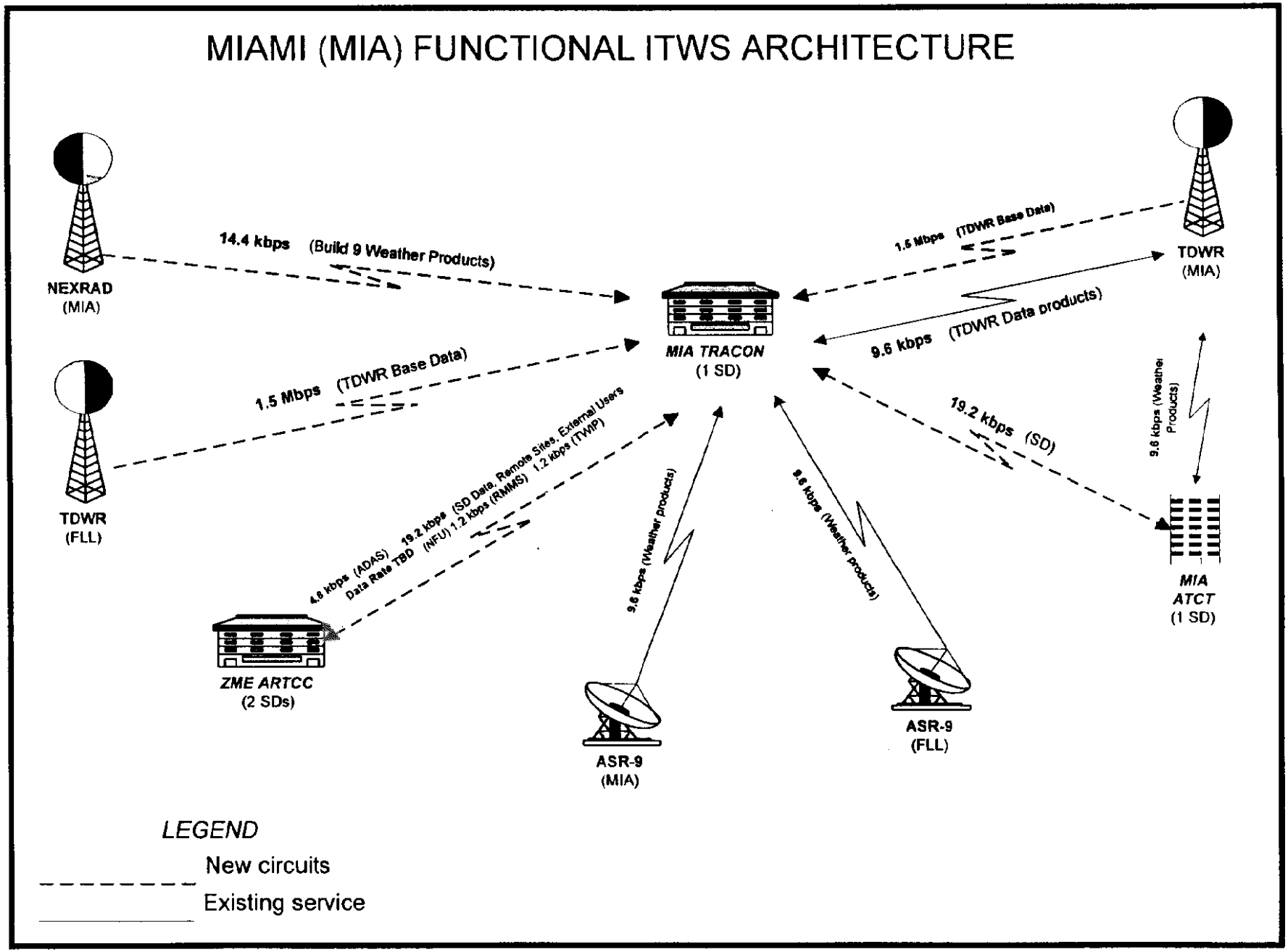

HOUSTON (IAH) FUNCTIONAL ITWS ARCHITECTURE
HOU TRACON
9.6 kbps (TDWR Data Products)
TDWR (HOU)
1.5 Mbps (TDWR Base Data)
9.6 kbps (TDWR Data Products)
IAH TRACON (1 SD)
14.4 kbps (Build 9 Weather Products)
NEXRAD (HOU)
9.6 kbps (Weather Products, Display Data)
HOU ATCT (1 SD)
19.2 kbps (Display Data)
1.5 Mbps (TDWR Base Data)
9.6 kbps (TDWR Data Products)
19.2 kbps (Display Data)
4.8 kbps (ADAS) Data Rate TBD (NFU) 19.2 kbps (SD Data, Remote Site, Ext. Users) 1.2 kbps (RMMS) 1.2 kbps (TWIP)
9.6 kbps (Weather products)
9.6 kbps (Weather products)
ASR-9 (HOU)
9.6 kbps (Weather Products, Display Data)
TDWR (IAH)
IAH ATCT (1 SD)
ASR-9 (IAH)
ZHU ARTCC (2 SDs)
LEGEND
New circuits
Existing circuits
Based on final requirement, existing circuit for current display unit may be used for new unit


INDIANAPOLIS (IND) FUNCTIONAL ITWS ARCHITECTURE
NEXRAD
(IND)
14.4 kbps (Build 9 Weather Products)
IND TRACON
(1 SD)
1.5 Mbps (TDWR Base Data)
9.6 kbps (TDWR Data Products)
TDWR
(IND)
4.8 kbps (ADAS) 19.2 kbps (SD Data, Remote Sites, External Users
Data Rate TBD (NFU) 1.2 kbps (RMMS) 1.2 kbps (TWIP)
19.2 kbps (SD)
9.6 kbps(Weather Products)
ZID ARTCC
(2 SDs)
4.8 kbps(ADAS)
9.6 kbps(Weather products)
IND
ATCT
(1 SD)
ZAU ARTCC
(0 SD)
ASR-9
(IND)
LEGEND
New circuits
Existing service

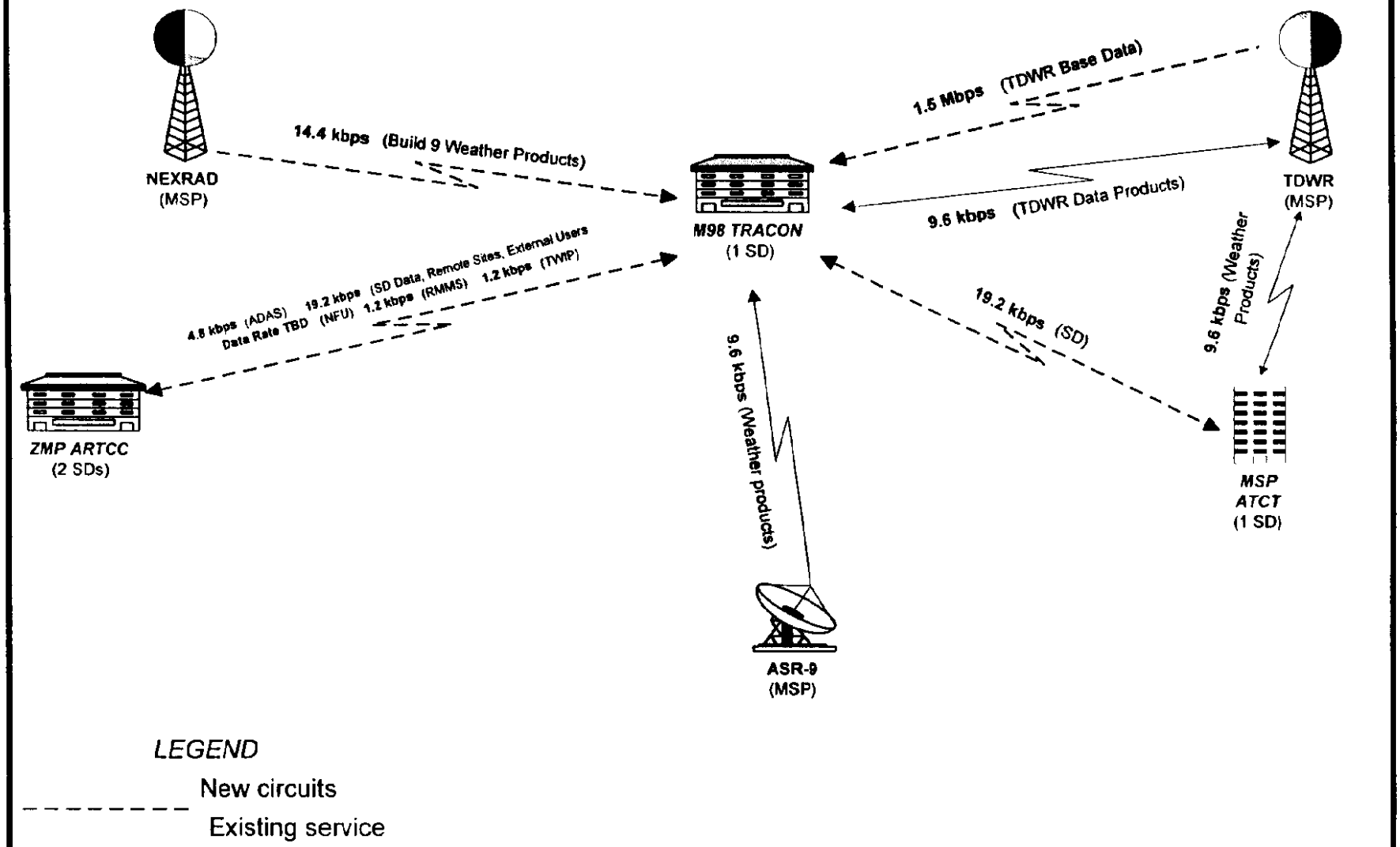

KANSAS CITY (MCI) FUNCTIONAL ITWS ARCHITECTURE
NEXRAD
(MCI)
14.4 kbps (Build 9 Weather Products)
1.5 Mbps (TDWR Base Data)
TDWR
(MCI)
MCI TRACON
(1 SD)
9.6 kbps (TDWR Data Products)
4.8 kbps (ADAS)
Data Rate TBD
19.2 kbps (SD Data, Remote Sites, External Users
(NFU) 1.2 kbps (RMMS) 1.2 kbps (TWIP)
19.2 kbps (SD)
9.6 kbps (Weather Products)
9.6 kbps (Weather products)
ZKC ARTCC
(2 SDs)
SLC
ATCT
(1 SD)
ASR-9
(MCI)
LEGEND
New circuits
Existing service

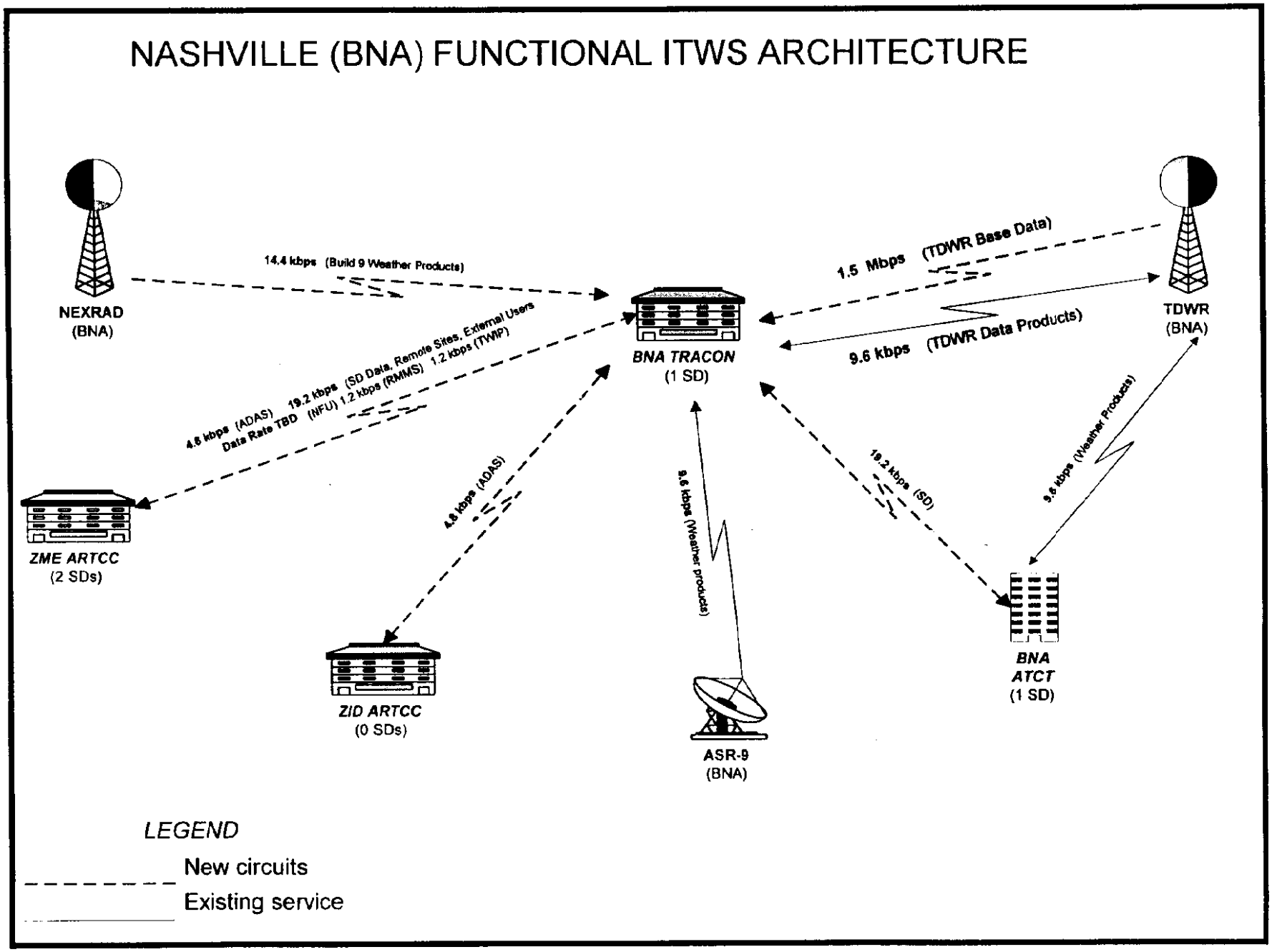

LOUISVILLE (SDF) FUNCTIONAL ITWS ARCHITECTURE
NEXRAD
(SDF)
14.4 kbps (Build 9 Weather Products)
1.5 Mbps (TDWR Base Data)
TDWR
(SDF)
9.6 kbps (TDWR Data Products)
SDF TRACON
(1 SD)
4.8 kbps (ADAS) 19.2 kbps (SD Data, Remote Sites, External Users
Data Rate TBD (NFU) 1.2 kbps (RMMS) 1.2 kbps (TWIP)
19.2 kbps (SD)
9.6 kbps (Weather Products)
4.8 kbps (ADAS)
9.6 kbps (Weather products)
ZID ARTCC
(2 SDs)
SDF
ATCT
(1 SD)
ZME ARTCC
(0 SD)
ASR-9
(SDF)
LEGEND
New circuits
Existing service

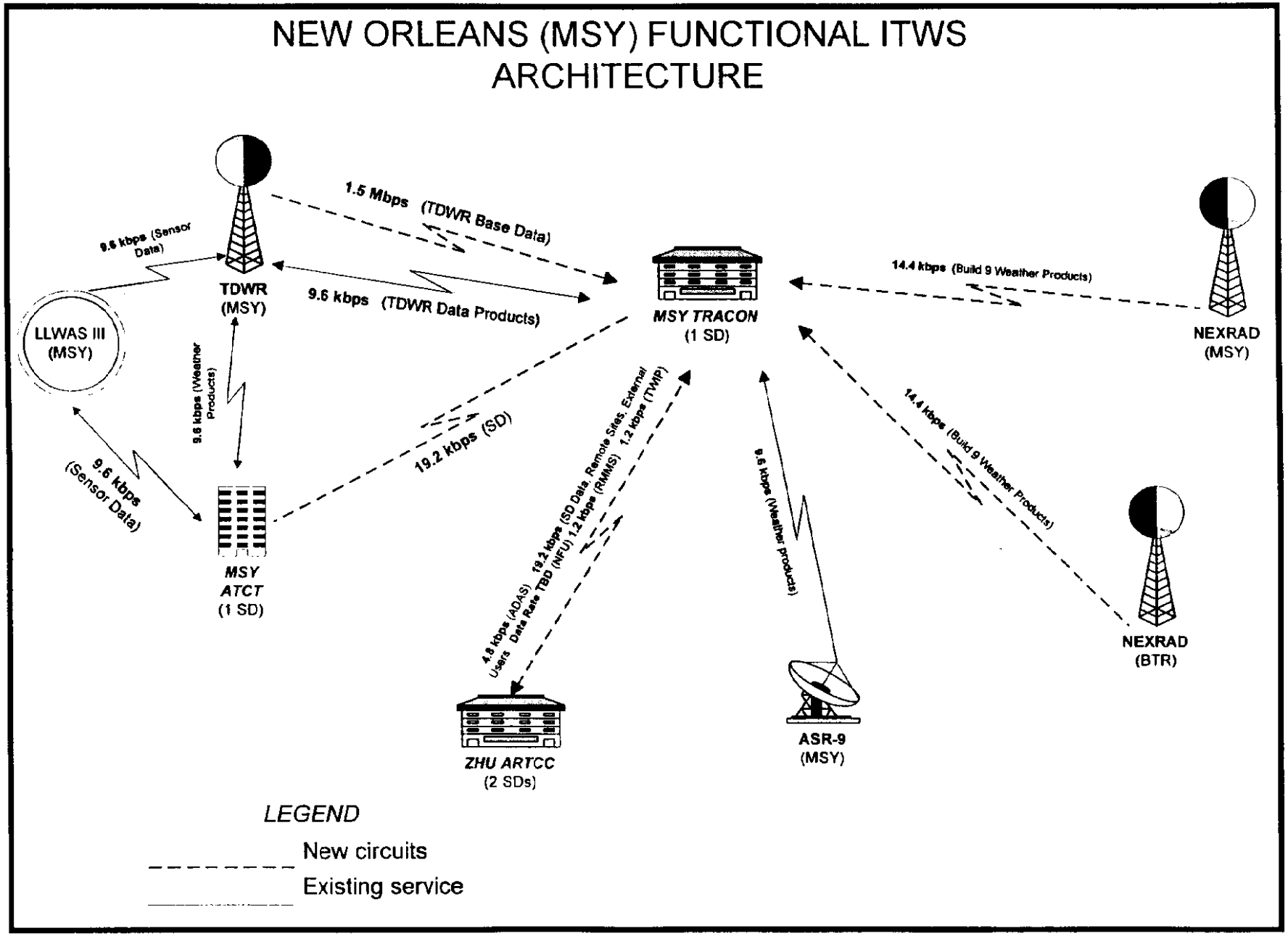

MEMPHIS (MEM) FUNCTIONAL ITWS ARCHITECTURE
NEXRAD (MEM)
14.4 kbps (Build 9 Weather Products)
MEM TRACON (1 SD)
1.5 Mbps (TDWR Base Data)
9.6 kbps (TDWR Data Products)
TDWR (MEM)
4.8 kbps (ADAS) Data Rate TBD (NFU) 19.2 kbps (SD Data, Remote Site, Ext. Users) 1.2 kbps (RMMS) 1.2 kbps (TWP)
ZME ARTCC (2 SDs)
9.6 kbps (Weather products)
ASR-9 (MEM)
19.2 kbps (SD)
9.6 kbps (Weather Products, Display Data)
MEM ATCT (1 SD)
LEGEND
New circuits
Existing service


MIAMI (MIA) FUNCTIONAL ITWS ARCHITECTURE
NEXRAD (MIA)
14.4 kbps (Build 9 Weather Products)
TDWR (FLL)
1.5 Mbps (TDWR Base Data)
4.8 kbps (ADAS) 19.2 kbps (SD Data, Remote Sites, External Users Data Rate TBD (NFU) 1.2 kbps (RMMS) 1.2 kbps (TWIP)
ZME ARTCC (2 SDs)
MIA TRACON (1 SD)
9.6 kbps (Weather products)
ASR-9 (MIA)
9.6 kbps (Weather products)
ASR-9 (FLL)
1.5 Mbps (TDWR Base Data)
TDWR (MIA)
9.6 kbps (TDWR Data products)
19.2 kbps (SD)
9.6 kbps (Weather Products)
MIA ATCT (1 SD)
LEGEND
New circuits
Existing service

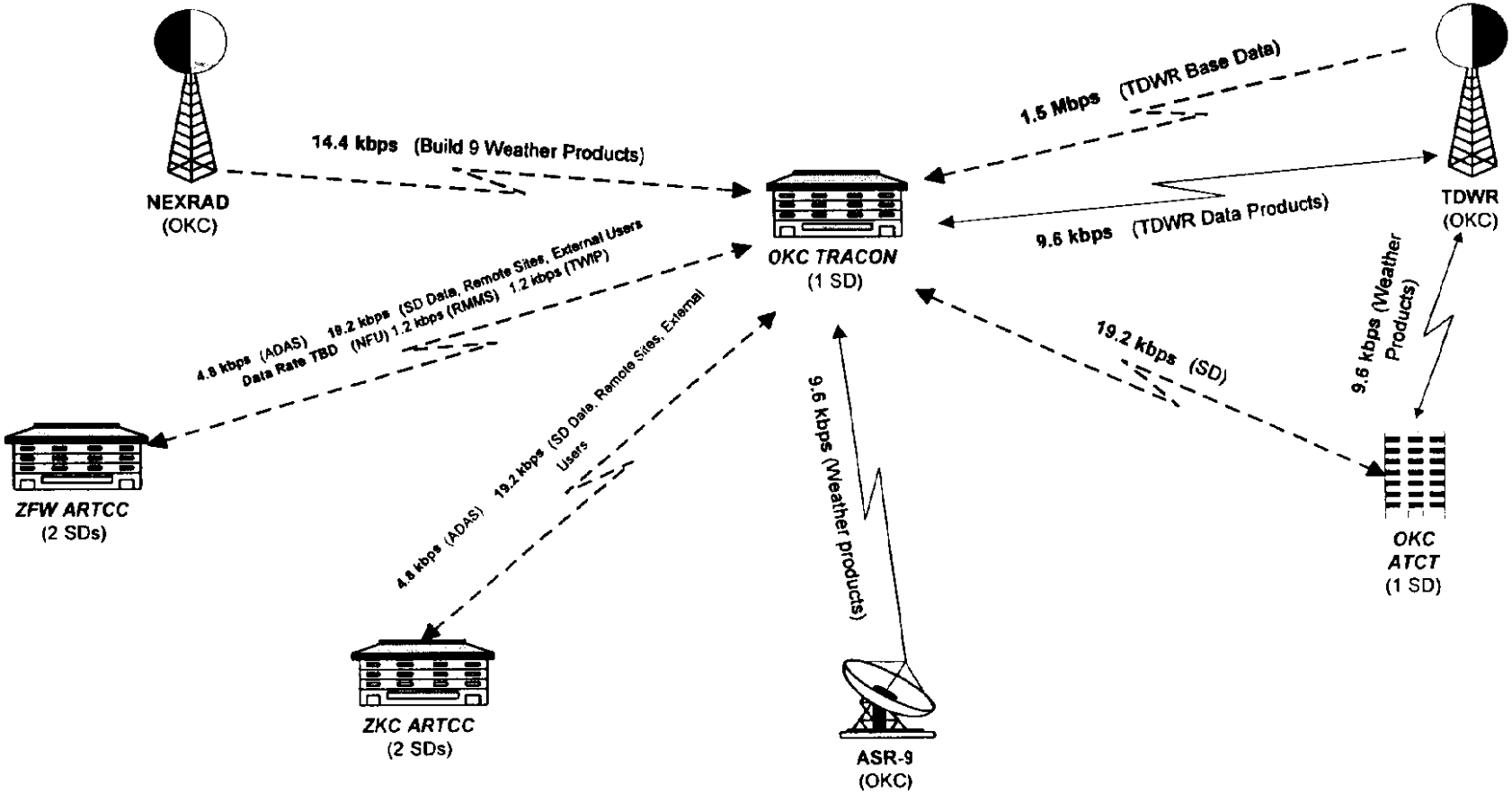
MINNEAPOLIS (M98) FUNCTIONAL ITWS ARCHITECTURE




NASHVILLE (BNA) FUNCTIONAL ITWS ARCHITECTURE
NEXRAD
(BNA)
14.4 kbps (Build 9 Weather Products)
1.5 Mbps (TDWR Base Data)
TDWR
(BNA)
BNA TRACON
(1 SD)
9.6 kbps (TDWR Data Products)
4.8 kbps (ADAS)
19.2 kbps (SD Data, Remote Sites, External Users
Data Rate TBD (NFU) 1.2 kbps (RMMS) 1.2 kbps (TWIP)
ZME ARTCC
(2 SDs)
4.8 kbps (ADAS)
9.6 kbps (Weather products)
19.2 kbps (SD)
9.6 kbps (Weather Products)
ZID ARTCC
(0 SDs)
ASR-9
(BNA)
BNA
ATCT
(1 SD)
LEGEND
New circuits
Existing service


NEW ORLEANS (MSY) FUNCTIONAL ITWS ARCHITECTURE
1.5 Mbps (TDWR Base Data)
9.6 kbps (Sensor Data)
TDWR (MSY)
9.6 kbps (TDWR Data Products)
MSY TRACON (1 SD)
14.4 kbps (Build 9 Weather Products)
NEXRAD (MSY)
LLWAS III (MSY)
9.6 kbps (Weather Products)
19.2 kbps (SD)
9.6 kbps (Sensor Data)
MSY ATCT (1 SD)
4.8 kbps (ADAS) Users
19.2 kbps (SD Data, Remote Sites, External Data Rate TBD (NFU) 1.2 kbps (RMMS) 1.2 kbps (TWIP)
9.6 kbps (Weather products)
14.4 kbps (Build 9 Weather Products)
NEXRAD (BTR)
ZHU ARTCC (2 SDs)
ASR-9 (MSY)
LEGEND
New circuits
Existing service

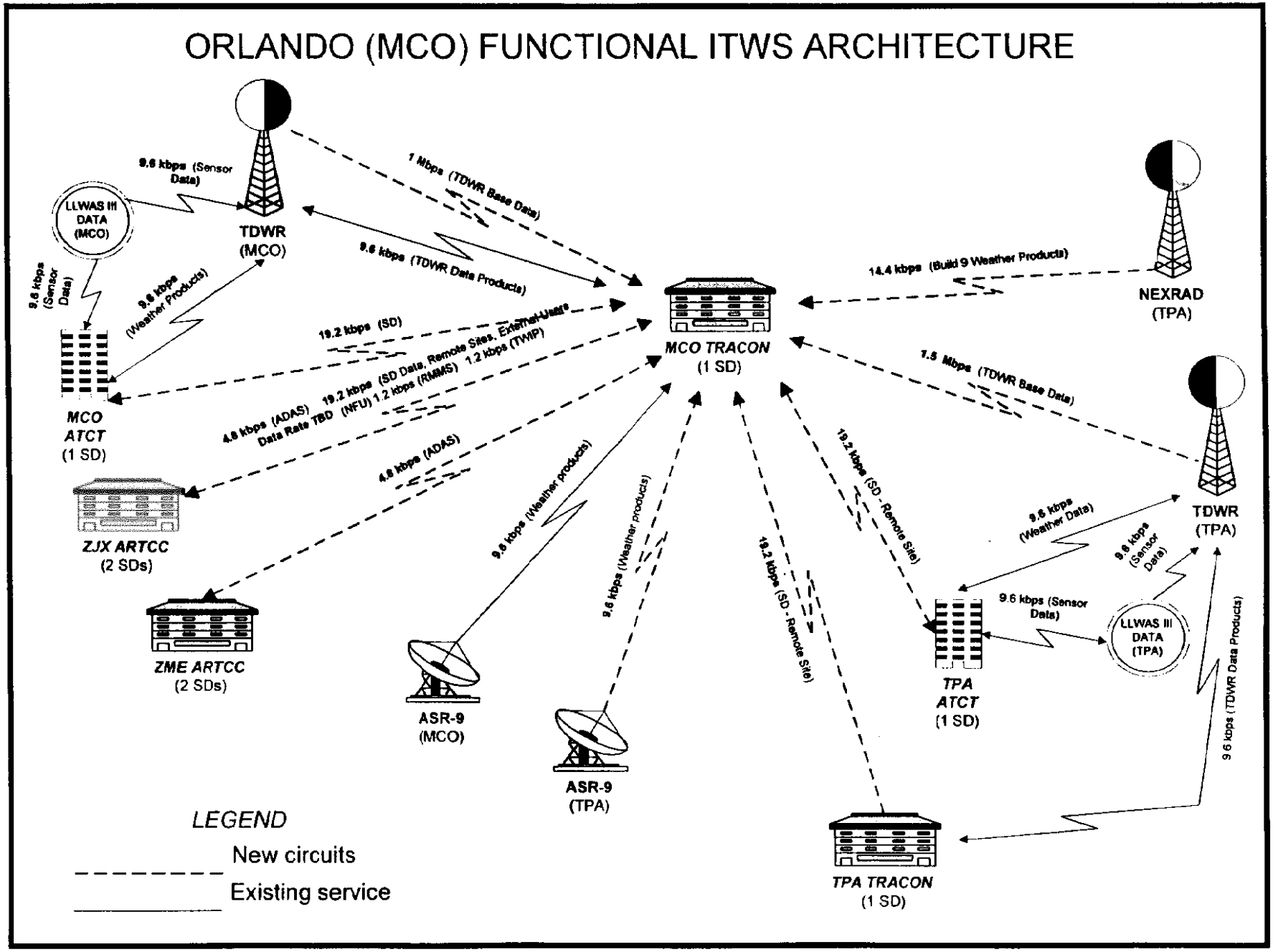
OKLAHOMA CITY (OKC) FUNCTIONAL ITWS ARCHITECTURE



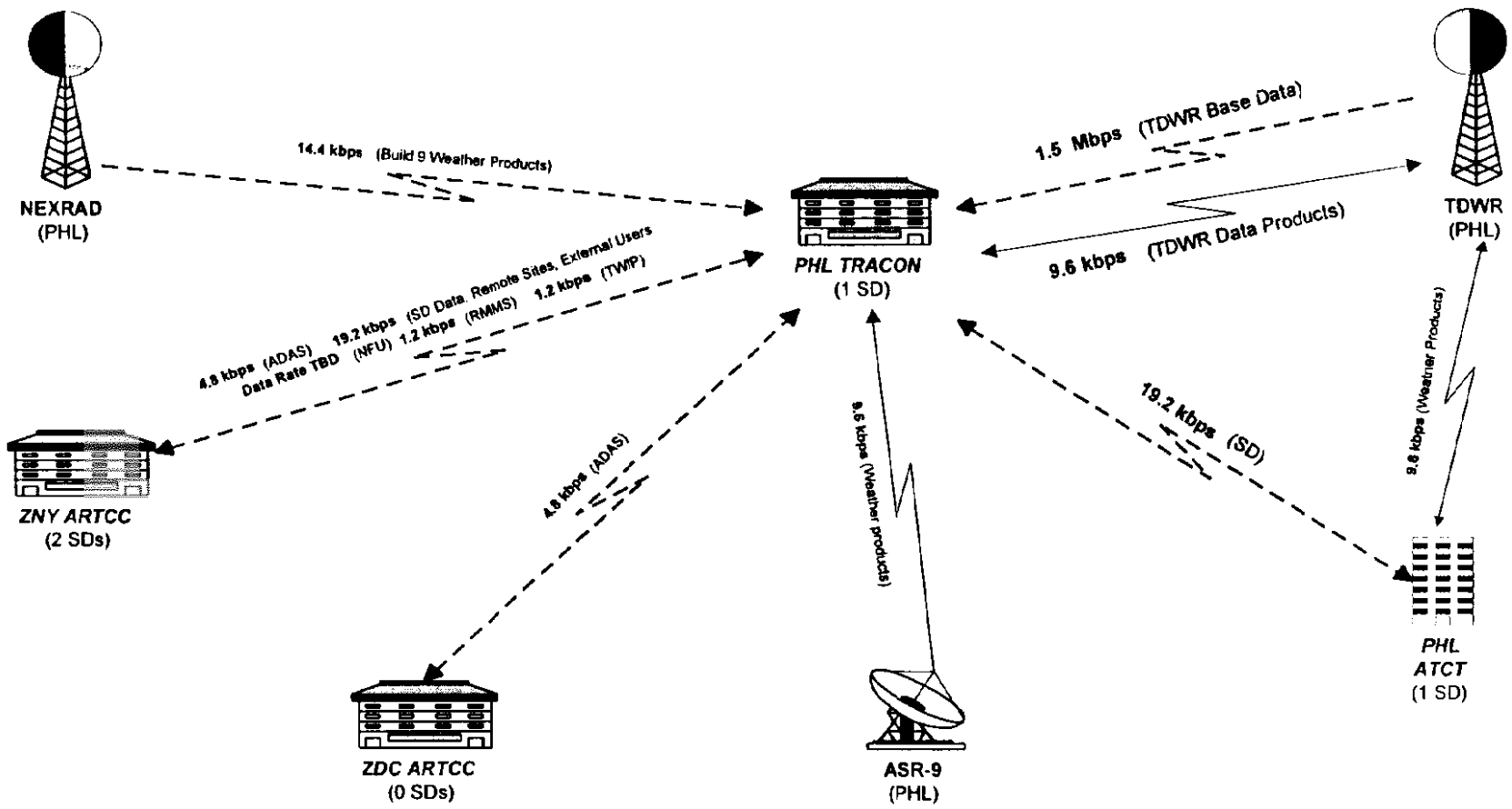
LEGEND

- - - - - - New circuits

——— Existing service


ORLANDO (MCO) FUNCTIONAL ITWS ARCHITECTURE
9.6 kbps (Sensor Data)
LLWAS III DATA (MCO)
TDWR (MCO)
1 Mbps (TDWR Base Data)
9.6 kbps (TDWR Data Products)
9.6 kbps (Sensor Data)
9.6 kbps (Weather Products)
19.2 kbps (SD)
19.2 kbps (SD Data, Remote Sites, Ethernet-Users) 1.2 kbps (TWIP)
4.8 kbps (ADAS) Data Rate TBD (NFU) 1.2 kbps (RMMS)
4.8 kbps (ADAS)
MCO ATCT (1 SD)
ZJX ARTCC (2 SDs)
ZME ARTCC (2 SDs)
MCO TRACON (1 SD)
14.4 kbps (Build 9 Weather Products)
NEXRAD (TPA)
1.5 Mbps (TDWR Base Data)
TDWR (TPA)
9.6 kbps (Weather Data)
9.6 kbps (Sensor Data)
9.6 kbps (Sensor Data)
LLWAS III DATA (TPA)
TPA ATCT (1 SD)
9.6 kbps (TDWR Data Products)
9.6 kbps (Weather products)
9.6 kbps (Weather products)
19.2 kbps (SD - Remote Site)
19.2 kbps (SD - Remote Site)
ASR-9 (MCO)
ASR-9 (TPA)
TPA TRACON (1 SD)
LEGEND
New circuits
Existing service

PHILADELPHIA (PHL) FUNCTIONAL ITWS ARCHITECTURE

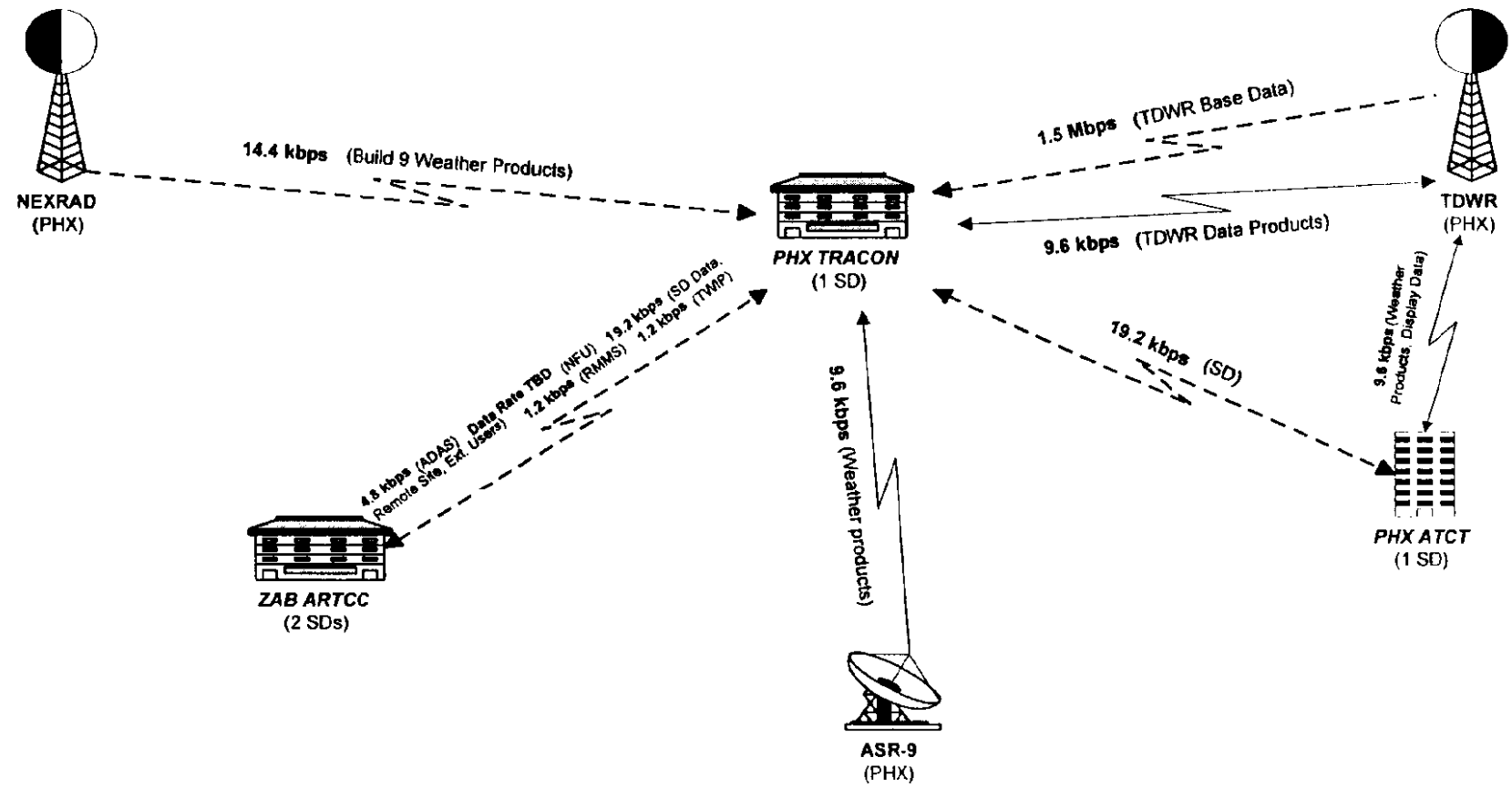


LEGEND

- - - - - - - - New circuits

———————— Existing service

PHOENIX (P50) FUNCTIONAL ITWS ARCHITECTURE

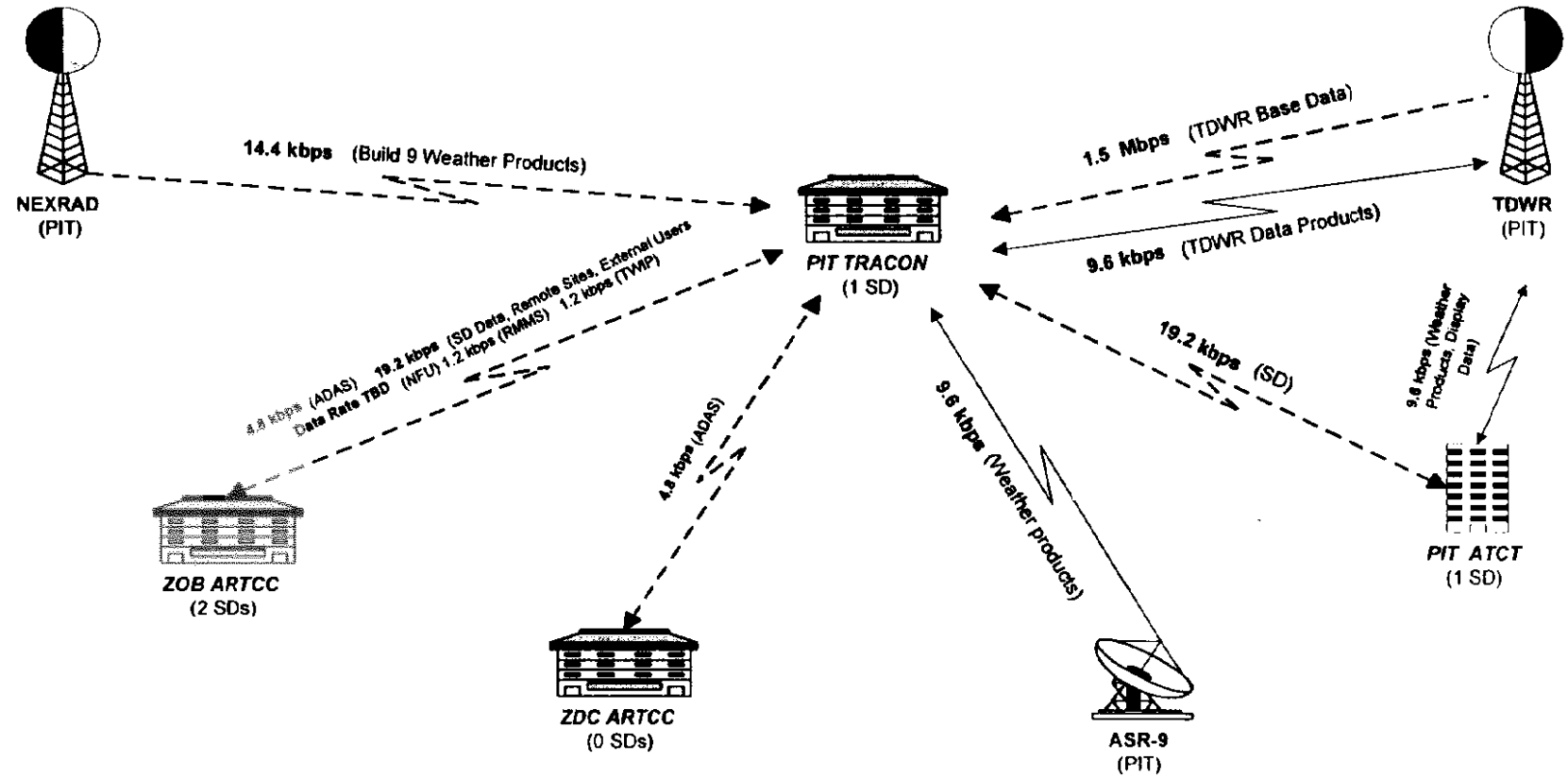


LEGEND

- - - - - - - - New circuits

———————— Existing service

PITTSBURGH (PIT) FUNCTIONAL ITWS ARCHITECTURE

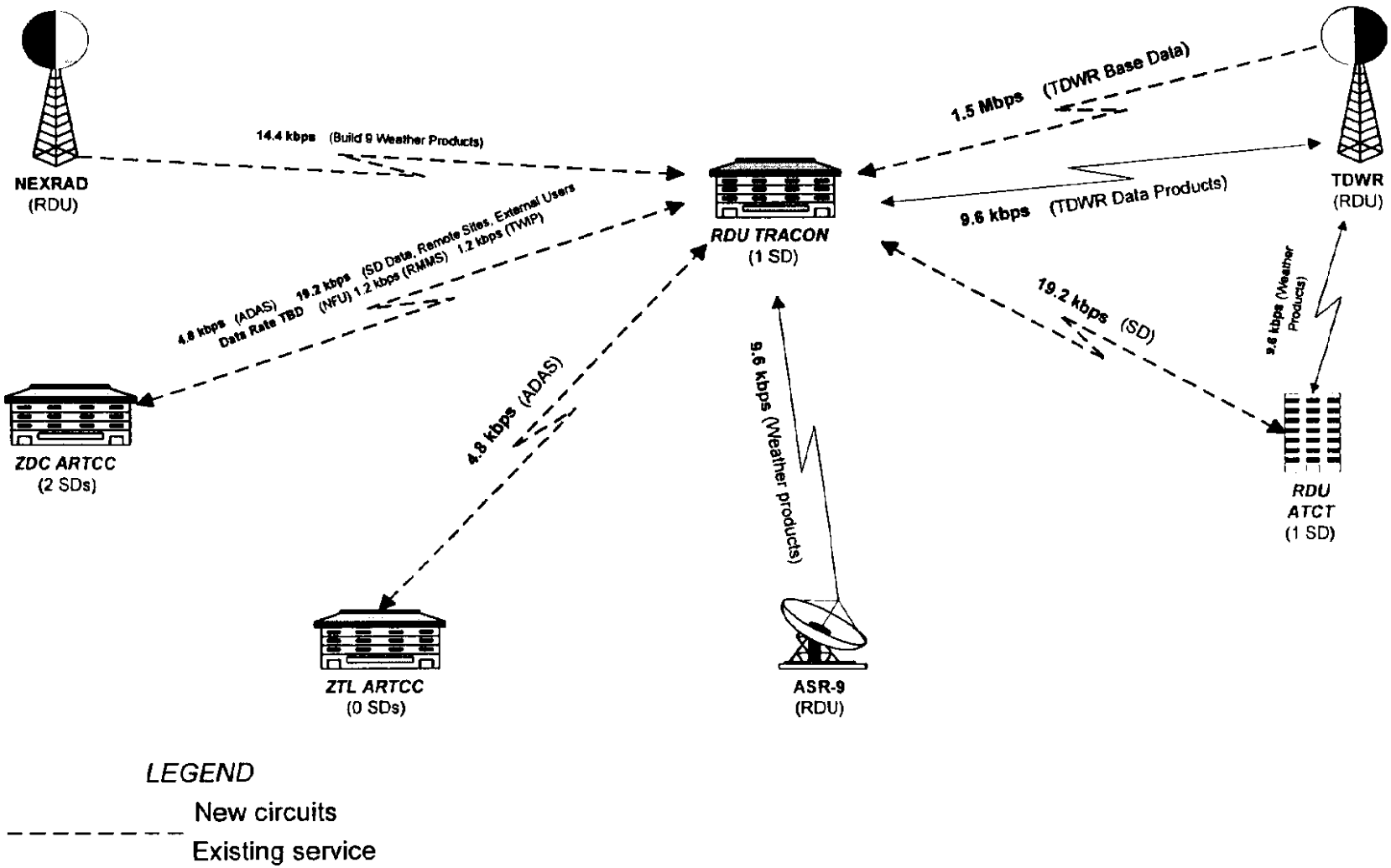


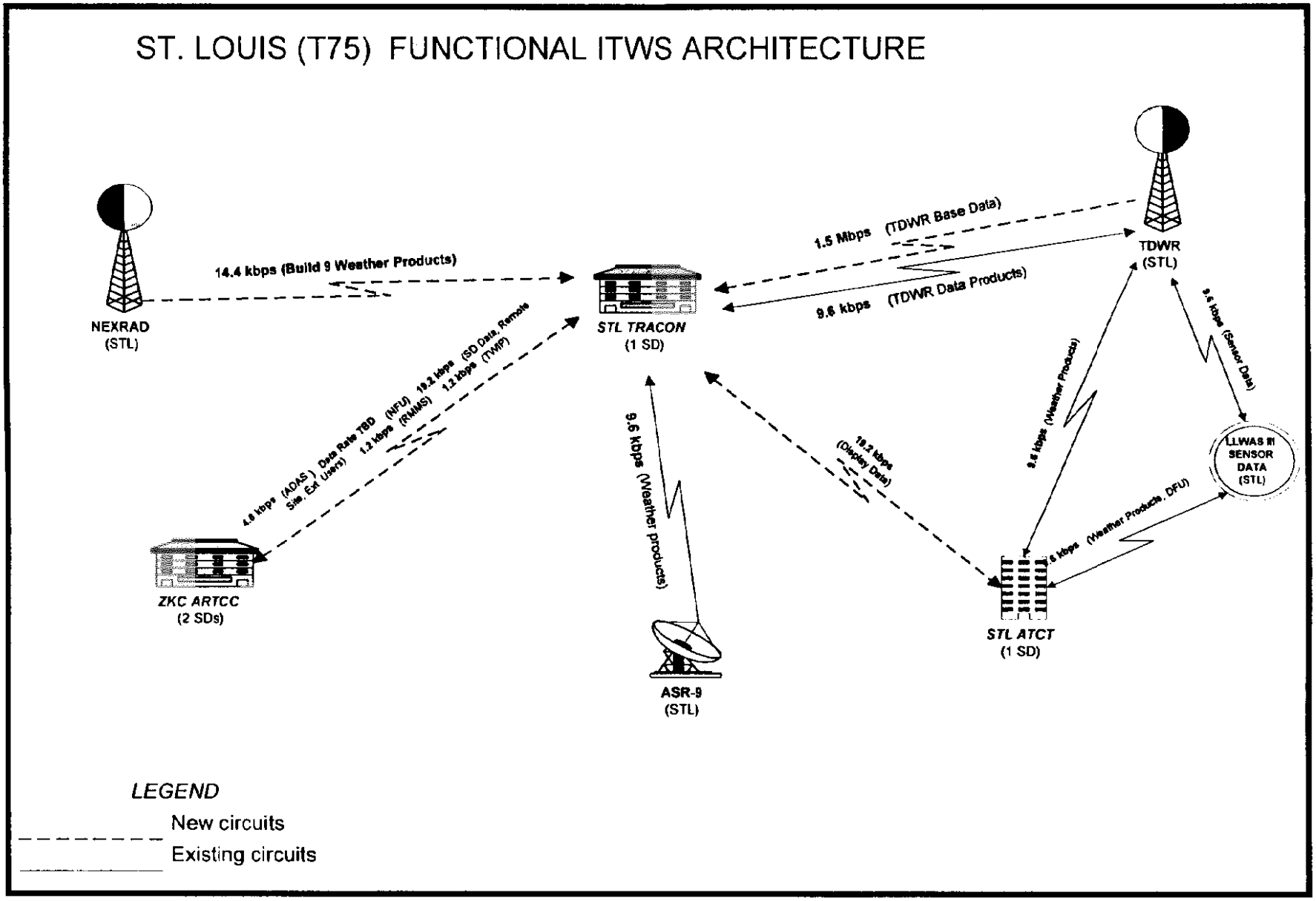
LEGEND

- - - - - - - - New circuits

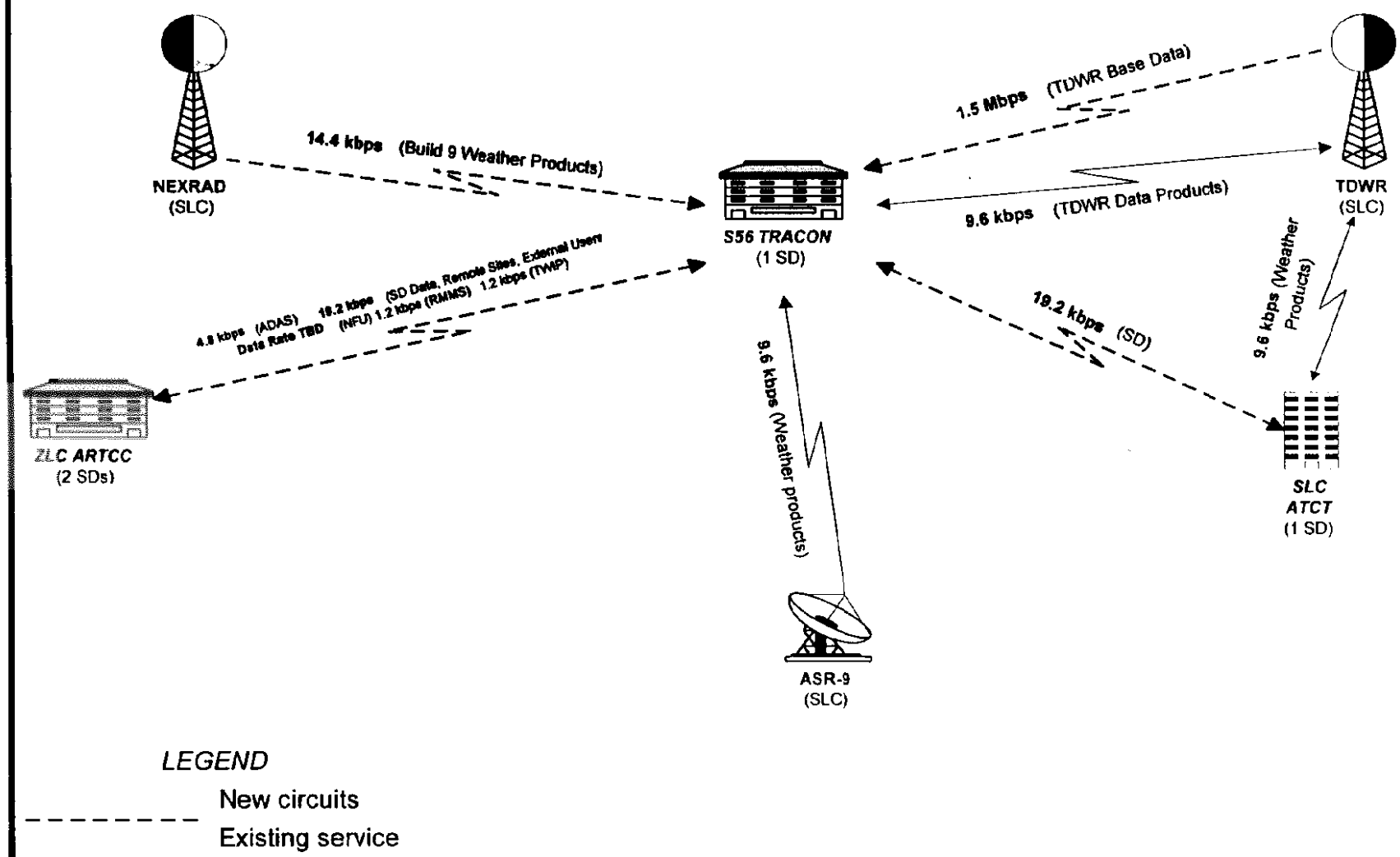
———————— Existing service

RALEIGH-DURHAM (RDU) FUNCTIONAL ITWS ARCHITECTURE

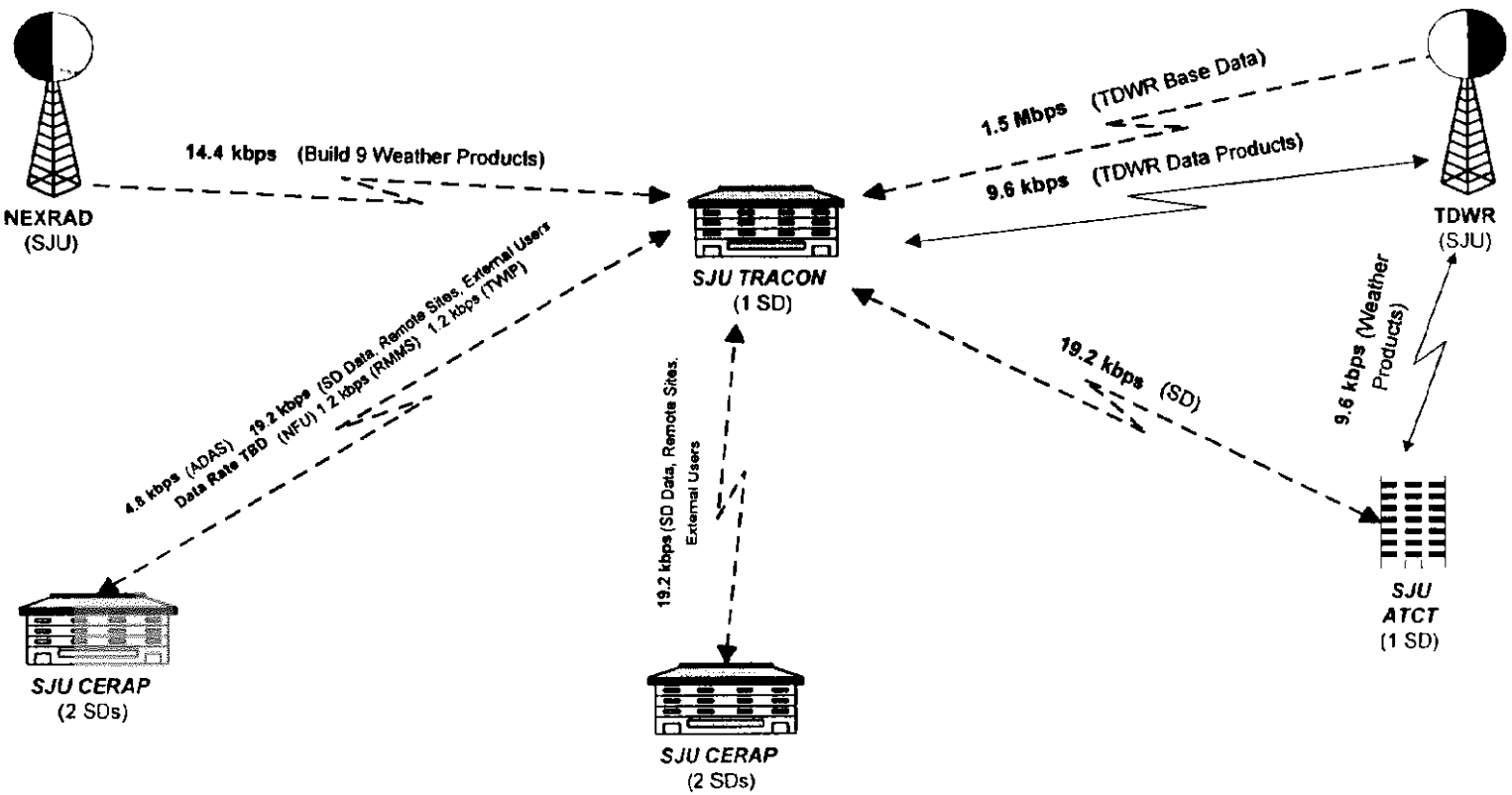



ST. LOUIS (T75) FUNCTIONAL ITWS ARCHITECTURE
NEXRAD
(STL)
14.4 kbps (Build 9 Weather Products)
STL TRACON
(1 SD)
1.5 Mbps (TDWR Base Data)
9.6 kbps (TDWR Data Products)
TDWR
(STL)
9.6 kbps (Sensor Data)
LLWAS III
SENSOR
DATA
(STL)
4.8 kbps (ADAS) Data Rate TBD (NFU) 19.2 kbps (SD Data, Remote Site, Ext Users) 1.2 kbps (RMMS) 1.2 kbps (TWIP)
ZKC ARTCC
(2 SDs)
9.6 kbps (Weather products)
ASR-9
(STL)
19.2 kbps (Display Data)
9.6 kbps (Weather Products)
9.6 kbps (Weather Products, DFU)
STL ATCT
(1 SD)
LEGEND
New circuits
Existing circuits

SALT LAKE CITY (S56) FUNCTIONAL ITWS ARCHITECTURE



SAN JUAN (SJU) FUNCTIONAL ITWS ARCHITECTURE

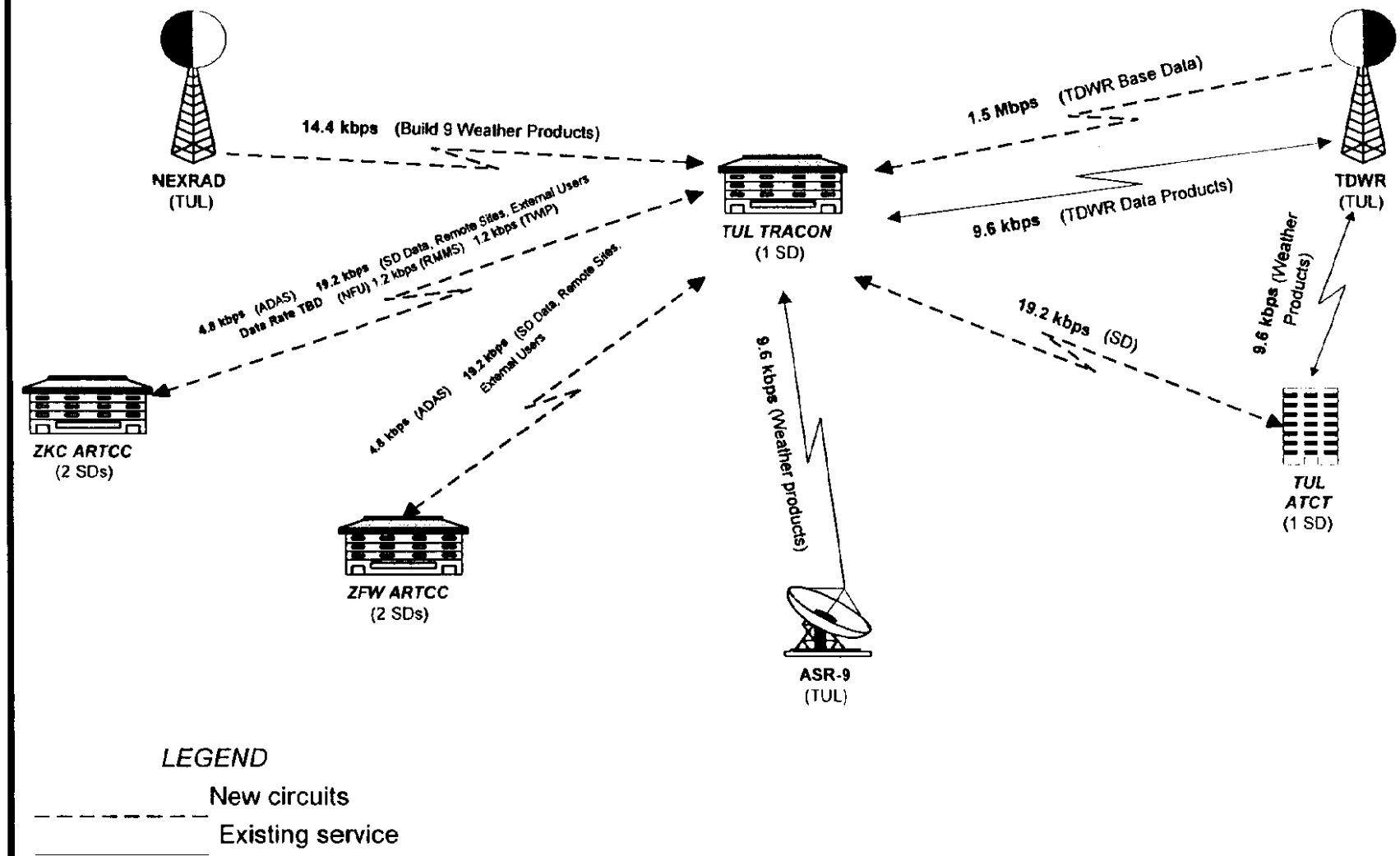


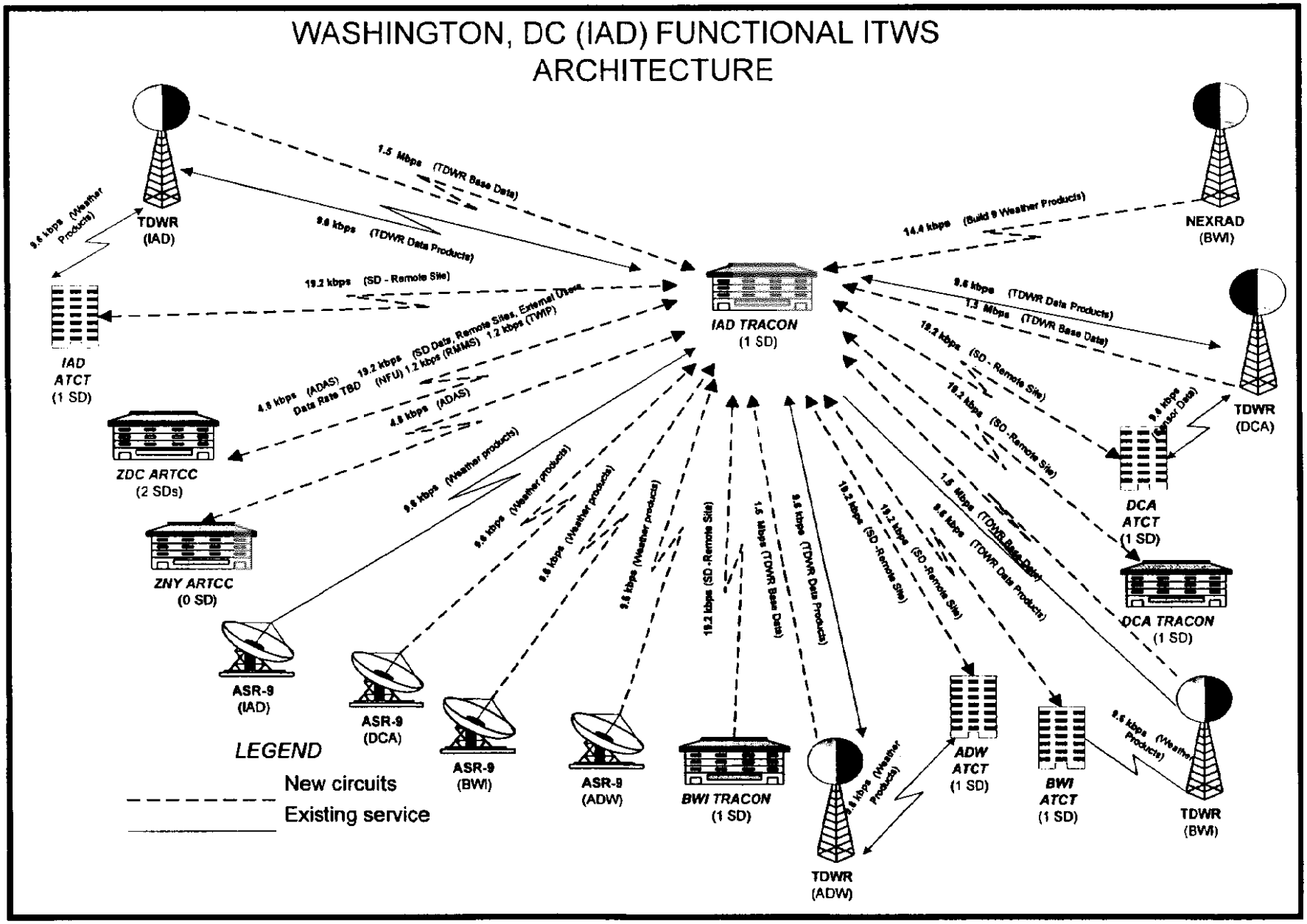
LEGEND

- - - - - - - - New circuits

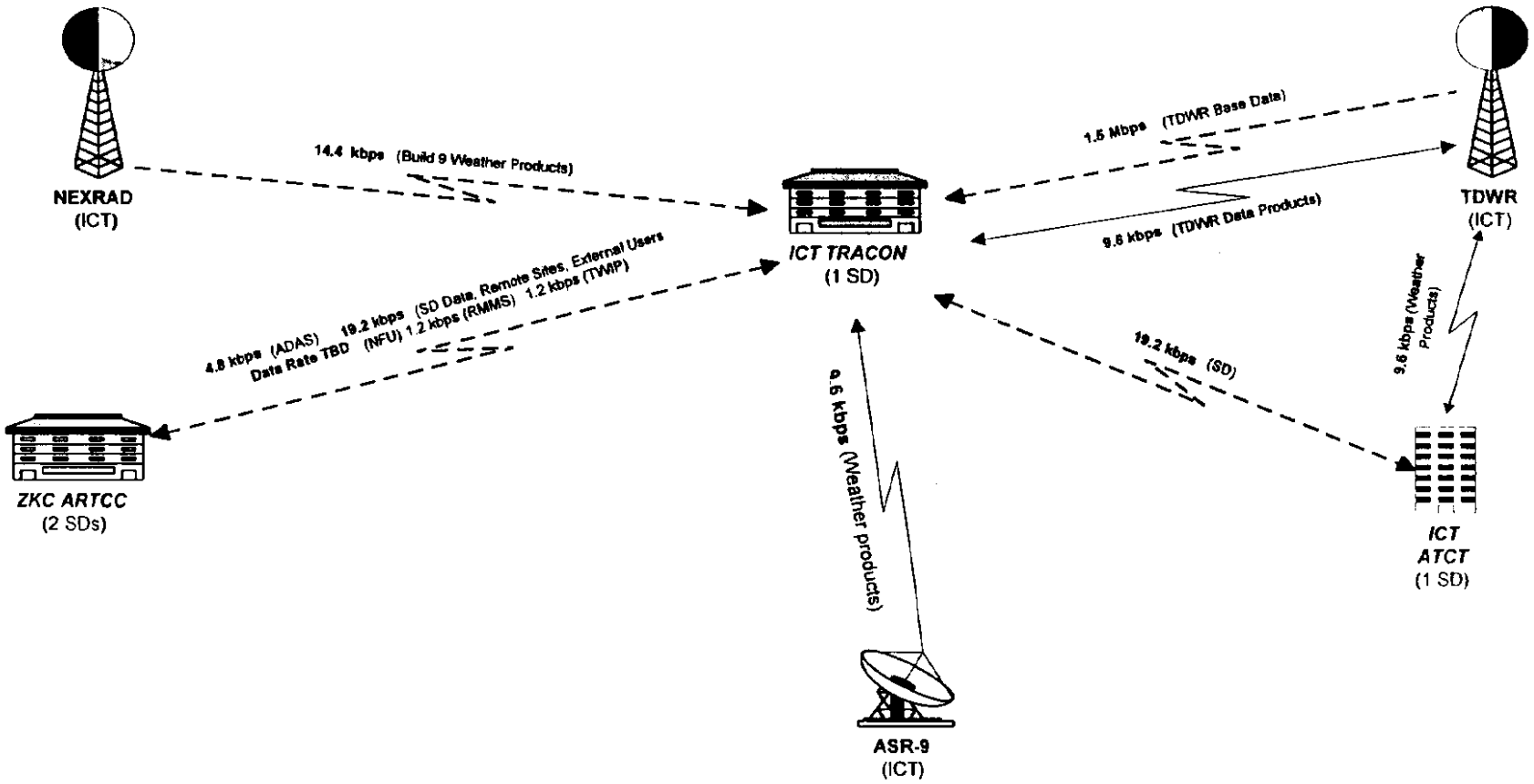
———————— Existing service

TULSA (TUL) FUNCTIONAL ITWS ARCHITECTURE




WASHINGTON, DC (IAD) FUNCTIONAL ITWS ARCHITECTURE
TDWR (IAD)
NEXRAD (BWI)
IAD TRACON (1 SD)
IAD ATCT (1 SD)
ZDC ARTCC (2 SDs)
ZNY ARTCC (0 SD)
TDWR (DCA)
DCA ATCT (1 SD)
DCA TRACON (1 SD)
ASR-9 (IAD)
ASR-9 (DCA)
ASR-9 (BWI)
ASR-9 (ADW)
BWI TRACON (1 SD)
TDWR (ADW)
ADW ATCT (1 SD)
BWI ATCT (1 SD)
TDWR (BWI)
1.5 Mbps (TDWR Base Data)
9.6 kbps (TDWR Data Products)
9.6 kbps (Weather Products)
19.2 kbps (SD - Remote Site)
14.4 kbps (Build 9 Weather Products)
9.6 kbps (TDWR Data Products)
1.5 Mbps (TDWR Base Data)
19.2 kbps (SD - Remote Site)
19.2 kbps (SD - Remote Site)
9.6 kbps (Sensor Data)
4.8 kbps (ADAS) Data Rate TBD
19.2 kbps (SD Data, Remote Sites, External Users) (NFU) 1.2 kbps (RMMS) 1.2 kbps (TWIP)
4.8 kbps (ADAS)
9.6 kbps (Weather products)
9.6 kbps (Weather products)
9.6 kbps (Weather products)
9.6 kbps (Weather products)
19.2 kbps (SD -Remote Site)
1.5 Mbps (TDWR Base Data)
9.6 kbps (TDWR Data Products)
19.2 kbps (SD -Remote Site)
19.2 kbps (SD -Remote Site)
9.6 kbps (TDWR Data Products)
1.5 Mbps (TDWR Base Data)
9.6 kbps (Weather Products)
9.6 kbps (Weather Products)
LEGEND
New circuits
Existing service

WICHITA (ICT) FUNCTIONAL ITWS ARCHITECTURE



LEGEND

- - - - - - - - New circuits

———————— Existing service

APPENDIX D

Specific Telecommunications Interfaces for Systems that Support ITWS
(To be completed in Version 2)

This Appendix discusses Vendor/FAA interoperability issues arising from potential software and hardware connectivities.

Table D-1 presents existing and new ITWS system interfaces:

	Type		Intermediate Facilities			Physical Layer			Data Link Layer					Network Layer		Transport Layer		
System	New	Existing	NADIN PSN	LINCS	Bandwidth Manager	8802-3	EIA-232	EIA-530	LLC	HDLC	LAPB	CD-2	ASYNC	X.25	IP	TCP	UDP	COTP*
ASR-9		X		X				X				X						
ADAS		X	X					X			X			X				
NEXRAD		X		X				X			X			X				
FBWTG	X			X	X			X		X					X	X		
TDWR		X		X		X			X						X		X	
NFU	X		X	X				X						X				
LLWAS		X		X			X						X					

Table 1 - System Functional Interface Requirements

OSI Version of Transmission Control Protocol

APPENDIX E

ITWS Project Schedule

MS Project Schedule

APPENDIX F

Abbreviations and Acronyms

The following abbreviations and acronyms are used throughout the ITWS Telecommunications Program Plan:

A.

A/C	Aircraft
ACE	Central Regional headquarters
ADAS	AWOS Data Acquisition System
ADLP	Aeronautical Data Link Processor
AEA	Eastern Regional headquarters
AGL	Great Lakes Regional headquarters
ANE	New England Regional headquarters
ANM	Northwest Mountain Regional headquarters
ARTCC	Air Route Traffic Control Center
ASO	Southern Regional headquarters
ASOS	Automated Surface Observation System
ASR	Airport Surveillance Radar
ASW	Southwest Regional headquarters
ATIS	Automated Terminal Information System
ATC	Air Traffic Control
ATCT	Air Traffic Control Tower
AVN	?
AWOS	Automated Weather Observation System
AWP	Western Pacific Regional headquarters

B.	None
C.	
CTAS	Center TRACON Automation System
CWSU	Center Weather Service Unit
D.	
DATACOM	Data Communications
DDC	Direct Digital Connect
DEMARC	Demarcation
DLP	Data Link Processor
E.	
Eta	?
F.	
FAA	Federal Aviation Administration
FAATC	FAA Technical Center
FAC	Facility Code
FBWTG	FAA Bulk Weather Telecommunications Gateway
FFAC	From Facility Code
FLID	From Location Identifier
FTP	File Transfer Program
G.	
GDLP	Ground Data Link Processor
GND	Ground
H.	None

I.

ICD	Interface Control Document
IOC	Initial Operational Capability
IRD	Interface Requirement Document
ISD	In-service Decision
ITWS	Integrated Terminal Weather System
J.	None

K.

KPBS	Kilobits Per Second

L.

LID	Location Identifier
LINCS	Leased Interfacility NAS Communications System
LLWAS	Low Level Wind Shear Alert System

M.

MBPS	Megabits Per Second
MDCRS	Meteorological Data Collection and Reporting System

N.

NADIN	National Airspace Data Interchange Network program
NAS	National Airspace System
NEXRAD	Next Generation Weather Radar
NFU	NAS Filter Unit
NIMS	NAS Infrastructure Management System
NLDN	National Lightning Detection Network
NWS	National Weather Service

NWSTG	National Weather Service Telecommunications Gateway
O.	
OT&E	Operational Testing and Evaluation
P.	
PDC	Program Designator Code
PG	Product Generator
PM	Program Manager
PSF	Program Support Facility
PSN	Packet Switched Network
PUP	Principle User Processor
Q.	None
R.	
RADAR	Radio Detection and Ranging
RBDT	Ribbon Display Terminal
RUC	Rapid Update Cycle
S.	
SD	Situation Display
T.	
TBA	To Be Added
TDWR	Terminal Doppler Weather Radar
TFAC	To Facility Code
TLID	To Location Identifier
TRACON	Terminal Radar Approach Control facility
TSR	Telecommunications Service Request

TPP	Telecommunications Program Plan
U.	
UHF	Ultra High Frequency
V.	
VHF	Very High Frequency
VOR	VHF Omni-directional Range
VOX	Voice
W.	
WARP	Weather and Radar Processor
WMSCR	Weather Message Switching Center Replacement
X.	
XMTR	Transmitter
Y.	None
Z.	None