

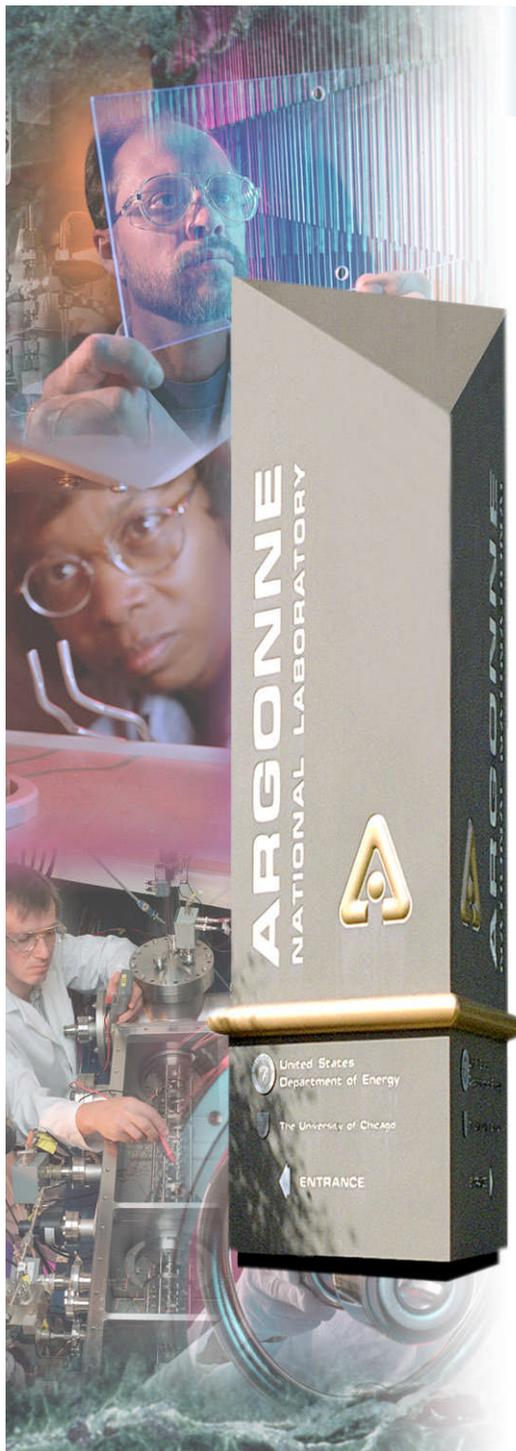
Network Infrastructure

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What is a Network Without Cabling?

- *The “Buzz Word in the Network World Today is “Wireless”.*
- *However, the basic Network Infrastructure is still Cabling, both Fiber Optic and Copper.*
- *The APS Network Backbone is comprised of both Multimode and Singlemode Fiber Optic Cable.*

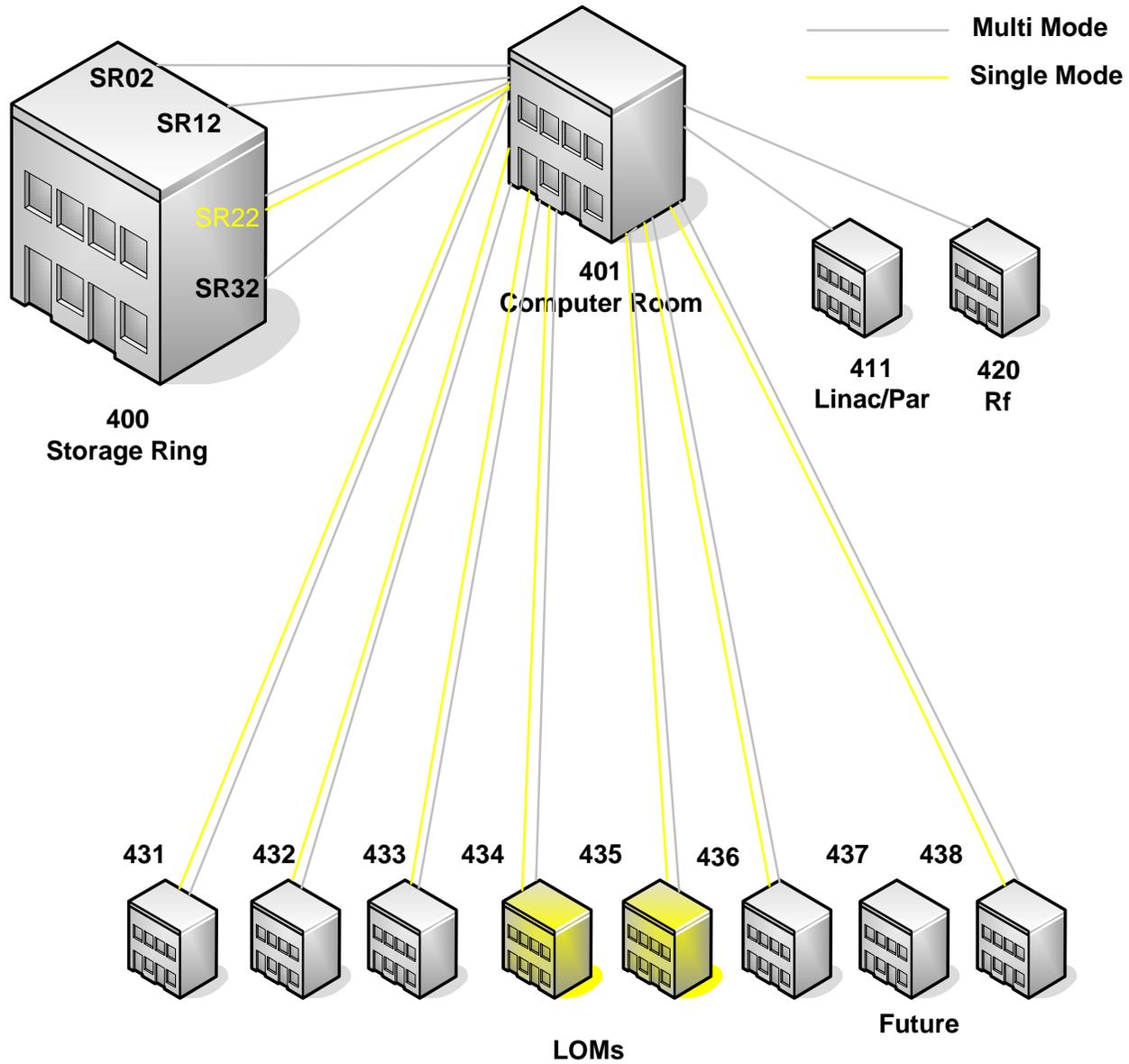
Network Cabling Services

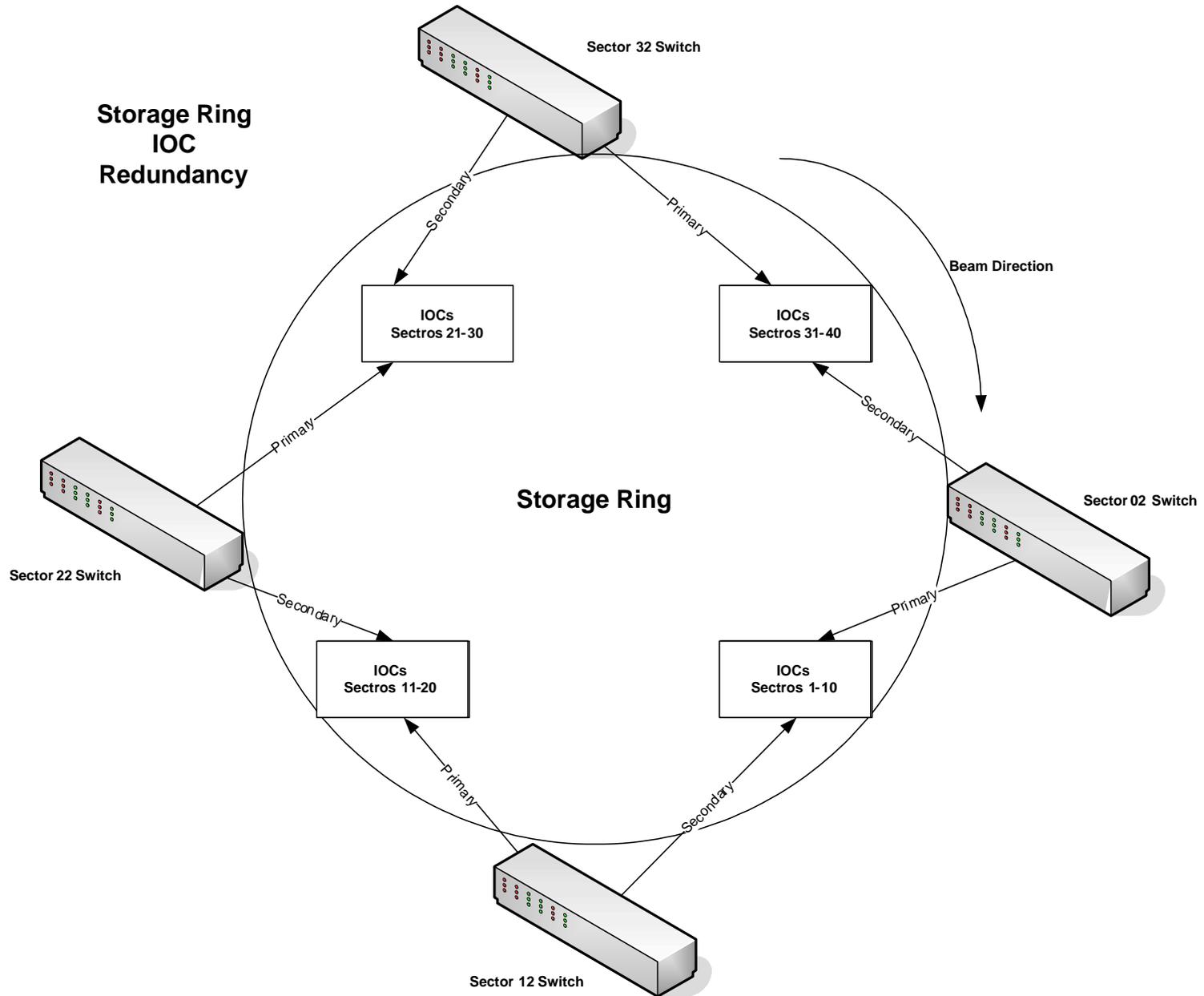
- *Services the Entire*
- *Accelerator Network,*
- *Lab Office Modules*
- *Beamline Networks,*
- *The Central Lab and Office Building*
- *Building 450 (PFS)*
- *Building 360, 362, 365, & 382 (APS Groups)*
- *The Argonne Guest House.*

Fiber Optic Cables

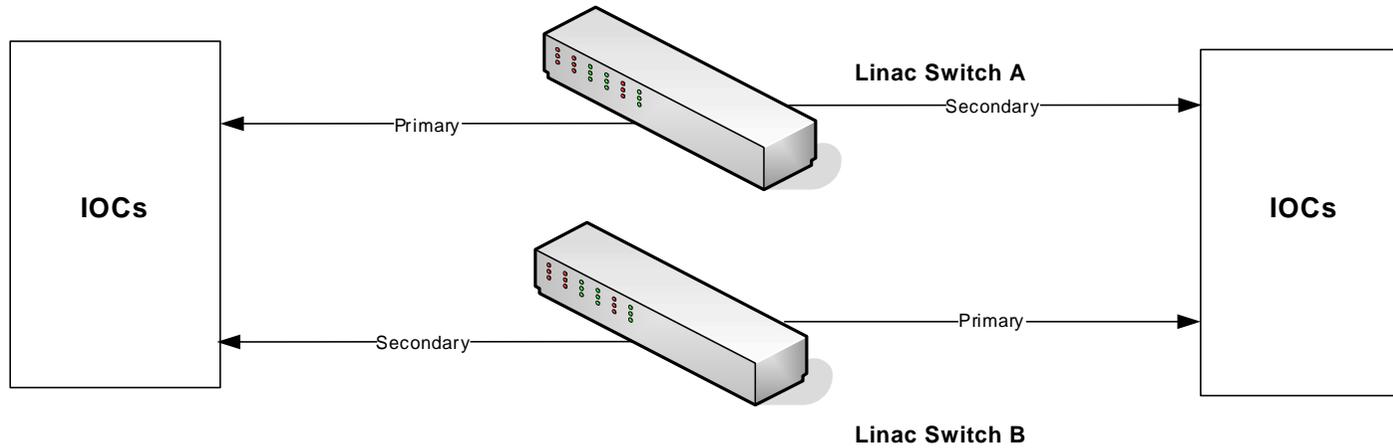
- ***The Total Number of Feet of Fiber Optic Cable Installed In the APS Complex is Approximately 180,000 Feet (~34 Miles). This Computes to 1,440,000 feet of Fibers (~ 272 Miles) Based on Average 8 Strand Cable.***
- ***Comprised of Mostly Multi-Mode Cable.***
- ***Single–Mode is Required when the Maximum Length Limit for Multi-Mode is Exceeded for Gigabit Speed Ethernet. (550m.)***
- ***Specific Cases are the Distance from The APS Computer Room to Sector 22, LOM434, and LOM435.***

Accelerator Network Fiber Backbone

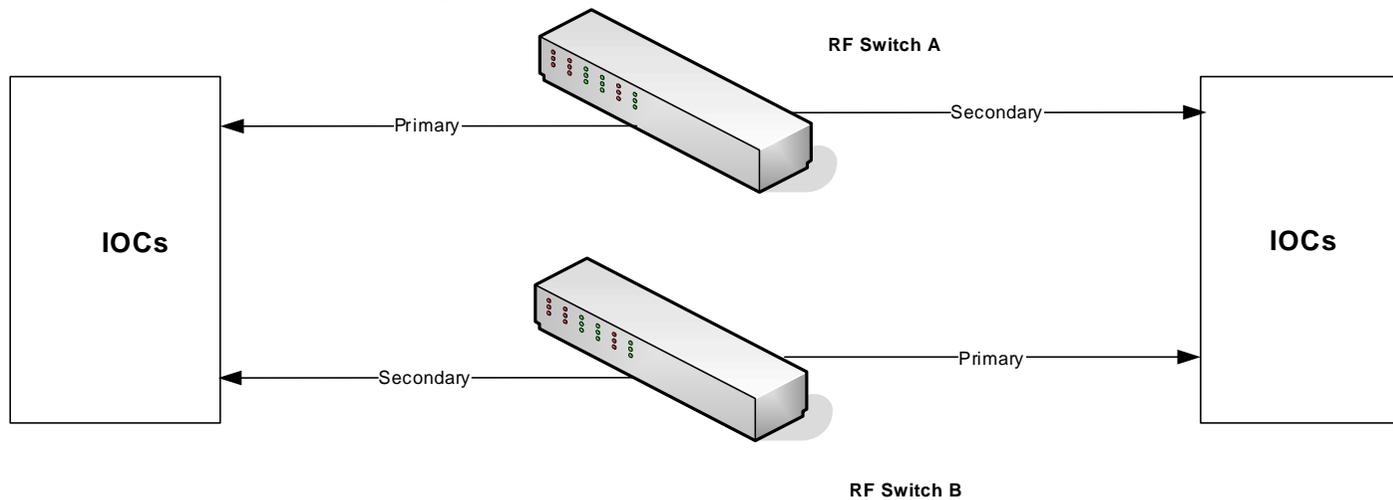


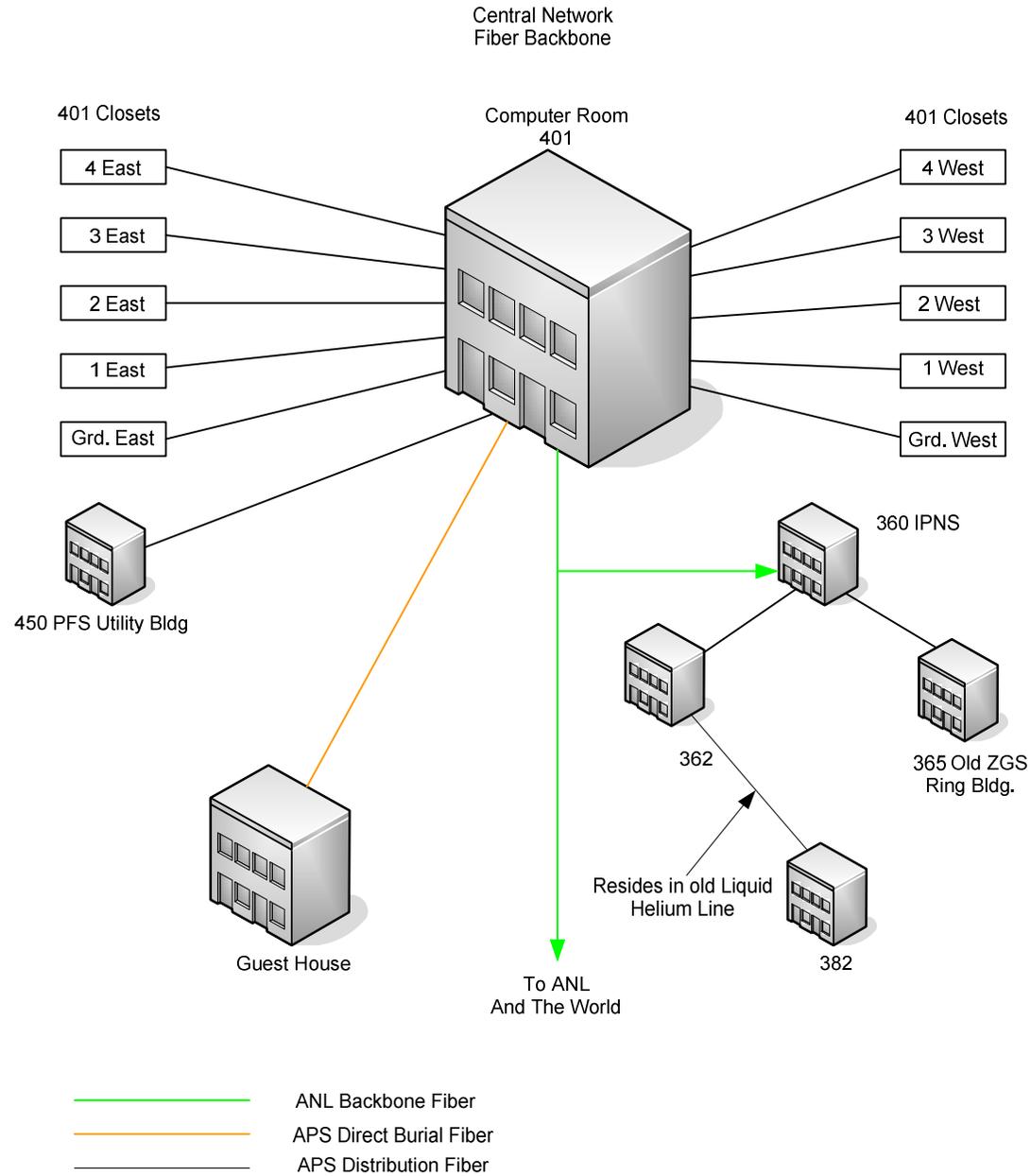


Linac/Par IOC Redundancy



RF IOC Redundancy





Network Connections Supported by The IT Group Network Switches

<u><i>Location</i></u>	<u><i>Number</i></u>	<u><i>Supported</i></u>
<i>Linac/Par</i>	<i>240</i>	<i>IOCs, ICR, Tech. Labs. & Cages</i>
<i>RF Bldg.</i>	<i>192</i>	<i>IOCs, Workstations, Test Stand</i>
<i>Storage Ring</i>	<i>768</i>	<i>IOCs, Workstations, Etc.</i>
<i>LOMs</i>	<i>1260</i>	<i>Offices, Labs, & Beamlines</i>
<i>Computer Rm.</i>	<i>1120</i>	<i>Remote Switches, Servers, Etc.</i>
<i>CLO</i>	<i>1344</i>	<i>Offices, Labs, Conference Cent.</i>
<i>Bldg. 360</i>	<i>56</i>	<i>Bldgs., 360, 362, 365, & 382</i>
 	<hr/>	
<i>Total:</i>	<i>4980</i>	

```
hubclo4w#sho inter status module 2
```

Port	Name	Status	Vlan	Duplex	Speed	Type
Gi2/1	001-4D A4117	notconnect	48	auto	auto	
Gi2/2	002-4D A4117	connected	48	a-full	a-100	
Gi2/3	003-4D A4117	notconnect	48	auto	auto	
Gi2/4	005-4D A4119	connected	48	a-full	a-1000	
Gi2/5	007-4D A4125	connected	48	a-full	a-100	
Gi2/6	009-4D A4131	connected	48	a-full	a-100	
Gi2/7	010-4D A4131	notconnect	44	auto	auto	
Gi2/8	012-4D A4115	notconnect	48	auto	auto	
Gi2/9	017-4D A4113	connected	48	a-full	a-100	
Gi2/10	052-4D B4175	notconnect	48	auto	auto	
Gi2/11	020-4D A4112	connected	48	a-full	a-100	
Gi2/12	022-4D A4110	notconnect	48	auto	auto	
Gi2/13	024-4D A4121	connected	48	a-full	a-100	
Gi2/14	026-4D A4121	connected	48	a-full	a-100	
Gi2/15	031-4D A4000	notconnect	48	auto	auto	
Gi2/16	032-4D A4129	connected	48	a-full	a-100	
Gi2/17	033-4D A4129	connected	48	a-full	a-100	
Gi2/18	034-4D A4128	connected	48	a-full	a-100	
Gi2/19	036-4D B4145	notconnect	48	auto	auto	
Gi2/20	037-4D B4145	connected	48	a-full	a-100	
Gi2/21	038-4D B4149	connected	48	a-full	a-100	
Gi2/22	039-4D B4149	connected	48	a-full	a-1000	
Gi2/23	041-4D B4153	notconnect	48	auto	auto	
Gi2/24		notconnect	3	auto	auto	
Gi2/25	044-4D B4161	connected	48	a-full	a-1000	
Gi2/26	046-4D B4165	connected	48	a-full	a-100	
Gi2/27		notconnect	48	auto	auto	
Gi2/28	054-4D B4175	connected	500	a-full	a-100	
Gi2/29	055-4D B4175	connected	48	a-full	a-100	
Gi2/30	056-4D B4181	connected	48	a-full	a-100	
Gi2/31	058-4D B4100	notconnect	48	auto	auto	
Gi2/32	060-4D B4173	notconnect	48	auto	auto	
Gi2/33	062-4D B4173	notconnect	48	auto	auto	
Gi2/34	064-4D B4172	connected	48	a-full	a-100	
Gi2/35	066-4D B4163	connected	48	a-full	a-1000	
Gi2/36	067-4D B4163	notconnect	48	auto	auto	
Gi2/37	068-4D B4163	connected	48	a-full	a-100	
Gi2/38	069-4D B4163	notconnect	48	auto	auto	
Gi2/39	071-4D B4163	connected	48	a-full	a-100	
Gi2/40	072-4D B4159	connected	48	a-full	a-100	
Gi2/41	074-4D B4160	connected	48	a-full	a-100	
Gi2/42	077-4D B4155	connected	48	a-full	a-100	
Gi2/43	078-4D B4155	connected	48	a-full	a-100	
Gi2/44	079-4D B4155	connected	48	a-full	a-100	
Gi2/45	080-4D B4155	connected	48	a-full	a-100	
Gi2/46	083-4D B4146	connected	48	a-full	a-100	Ruzic
Gi2/47	085-4D B4150	connected	48	a-full	a-100	

```
hubsr02#sho inter status module 3
```

Port	Name	Status	Vlan	Duplex	Speed	Type
Fa3/1	iocfe04-p	connected	2	full	100	100BaseFX
Fa3/2	iocfe05-p	connected	2	full	100	100BaseFX
Fa3/3	iocfe01-p	connected	2	full	100	100BaseFX
Fa3/4	iocfe02-p	connected	2	full	100	100BaseFX
Fa3/5	iocfe03-p	connected	2	full	100	100BaseFX
Fa3/6	iocfe06-p	connected	2	full	100	100BaseFX
Fa3/7	iocfe07-p	connected	2	full	100	100BaseFX
Fa3/8	iocfe08-p	connected	2	full	100	100BaseFX
Fa3/9	iocfe09-p	connected	2	full	100	100BaseFX
Fa3/10	iocfe10-p	connected	2	full	100	100BaseFX
Fa3/11	iocfe35-s	notconnect	2	full	100	100BaseFX
Fa3/12	iocfe33-s	notconnect	2	full	100	100BaseFX
Fa3/13	iocfe34-s	notconnect	2	full	100	100BaseFX
Fa3/14	iocsrvid3-s	notconnect	2	full	100	100BaseFX
Fa3/15	iocslfb-p	connected	2	full	100	100BaseFX
Fa3/16	iocslbpm-p	connected	2	full	100	100BaseFX
Fa3/17	iocsbpmdp-s	notconnect	2	full	100	100BaseFX
Fa3/18		notconnect	2	full	100	100BaseFX
Fa3/19	iocs3fb-p	connected	2	full	100	100BaseFX
Fa3/20	iocs5fb-p	connected	2	full	100	100BaseFX
Fa3/21	iocs7fb-p	connected	2	full	100	100BaseFX
Fa3/22	iocs9fb-p	connected	2	full	100	100BaseFX
Fa3/23	iocs31fb-s	notconnect	2	full	100	100BaseFX
Fa3/24	iocs33fb-s	notconnect	2	full	100	100BaseFX
Fa3/25	iocs35fb-s	notconnect	2	full	100	100BaseFX
Fa3/26	iocs31bpm-s	notconnect	2	full	100	100BaseFX
Fa3/27	iocs33bpm-s	notconnect	2	full	100	100BaseFX
Fa3/28	iocs35bpm-s	notconnect	2	full	100	100BaseFX
Fa3/29	iocs37fb-s	notconnect	2	full	100	100BaseFX
Fa3/30	iocs39fb-s	notconnect	2	full	100	100BaseFX
Fa3/31	iocs40fb-s	notconnect	2	full	100	100BaseFX
Fa3/32	iocs35das-s	notconnect	2	full	100	100BaseFX
Fa3/33	iocid01-p	connected	2	full	100	100BaseFX
Fa3/34	iocsrtune-p	connected	2	full	100	100BaseFX
Fa3/35	iocpss01bm-p	connected	2	full	100	100BaseFX
Fa3/36	iocpss02bm-p	notconnect	2	full	100	100BaseFX
Fa3/37	iocpss03bm-p	connected	2	full	100	100BaseFX
Fa3/38	iocpss05bm-p	connected	2	full	100	100BaseFX
Fa3/39	iocpss06bm-p	connected	2	full	100	100BaseFX
Fa3/40	iocpss09bm-p	connected	2	full	100	100BaseFX
Fa3/41		notconnect	2	full	100	100BaseFX
Fa3/42		notconnect	2	full	100	100BaseFX
Fa3/43		notconnect	2	full	100	100BaseFX
Fa3/44		notconnect	2	full	100	100BaseFX
Fa3/45		notconnect	2	full	100	100BaseFX
Fa3/46		notconnect	2	full	100	100BaseFX
Fa3/47		notconnect	2	full	100	100BaseFX
Fa3/48	hubmcrd-4/1	connected	trunk	full	100	100BaseFX

Power for APS Networking Gear

- *All APS Networking Gear is Powered and Protected by Uninterruptible Power Supplies (UPS Units)*
- *The Large Units for the Computer Room and the Injection Control Room are Maintained Under an Outside Service Contract.*
- *The Smaller UPS units for the CLO and The LOMs are Maintained by the IT Group.*
- *This primarily involves Replacement of Batteries at the Prescribed Intervals.*

UPS Upgrades

- ***The two new 80KW Three-Phase UPS units Recently Installed are Replacing Three of the Old 18KVA Single Phase Units. (Central UPS 1, 2, & 3)***
- ***Two of the Old Units will be Reinstalled in the ICR, and the other will become a Fourth Controls 18KVAUPS for the Computer Room.***
- ***A proposal is being submitted to Replace the Remaining Controls 18KVA Single Phase UPS Units in the Computer Room With Larger Three Phase Units in the Future.***

APS CARDKEY ACCESS CONTROL SYSTEM

■ COMPUTERS

- HP ML370 Cardkey Server
- Compaq D500 Badging
- 4 Workstation (Data Entry)

■ HARDWARE

- D620 Panels (17)
- Smart Terminal Interface Door Controllers (129)
- CK720 Network Panel (1)
- Wiegand Technology Swipe Readers (120)
- Various Strike and Magnetic Locks
- Video Camera and Badging Printer

■ SOFTWARE

- Microsoft Windows 2003 Server
- Microsoft SQL Server
- Johnson Controls Cardkey Pegasys 2000

APS CARDKEY ACCESS CONTROL SYSTEM continued

■ ***MODES***

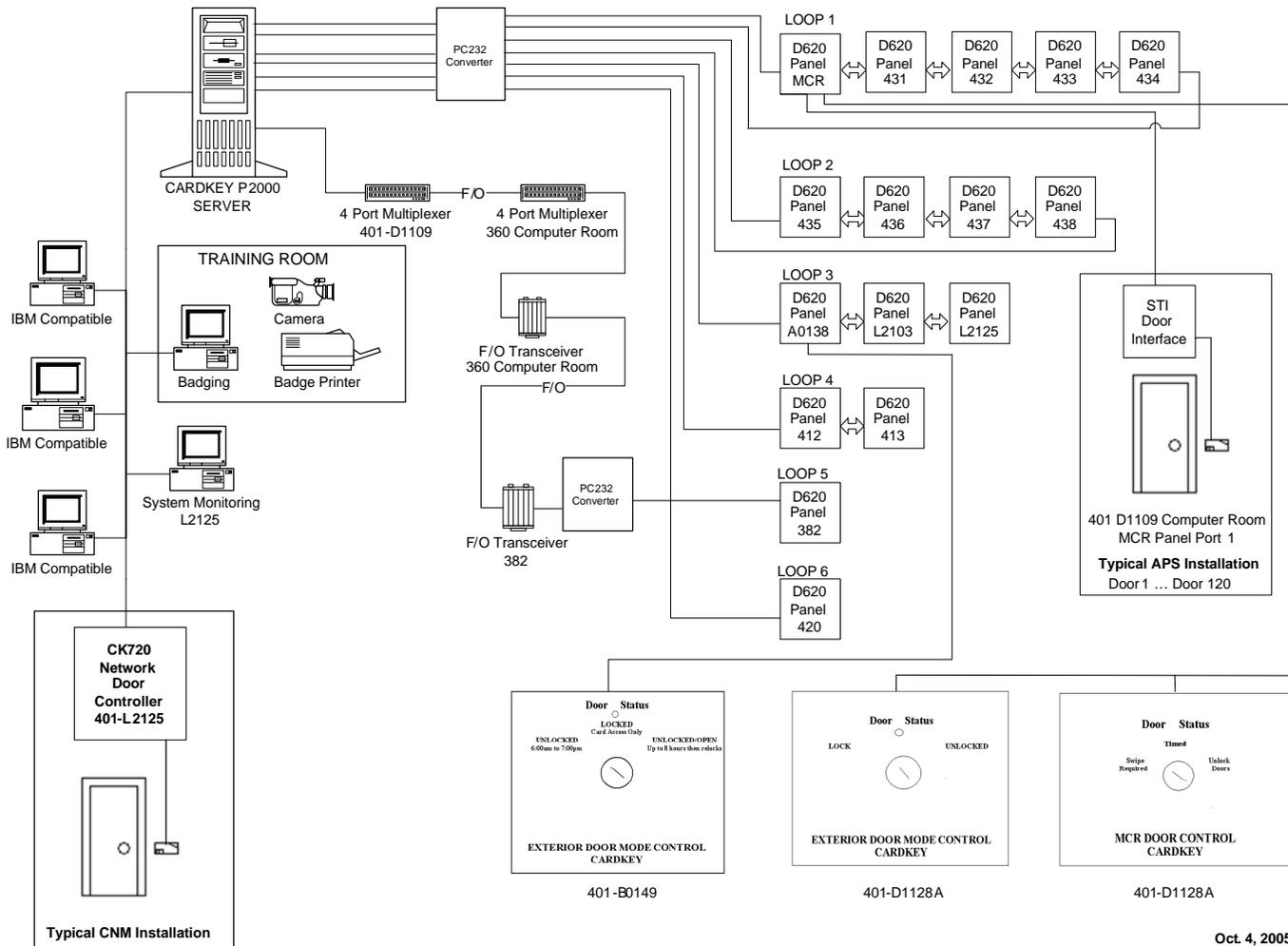
- Timed Locking and Unlocking of Exterior Doors
- Timed Locking and Unlocking of Various Internal Doors
- Emergency Key Switch Control of Exterior Doors
- Building 413 Laser Room CA Mode

■ ***Misc.***

- Cardholders 9,626 (Records)
- Access Groups (111)
- Terminal Groups (3)

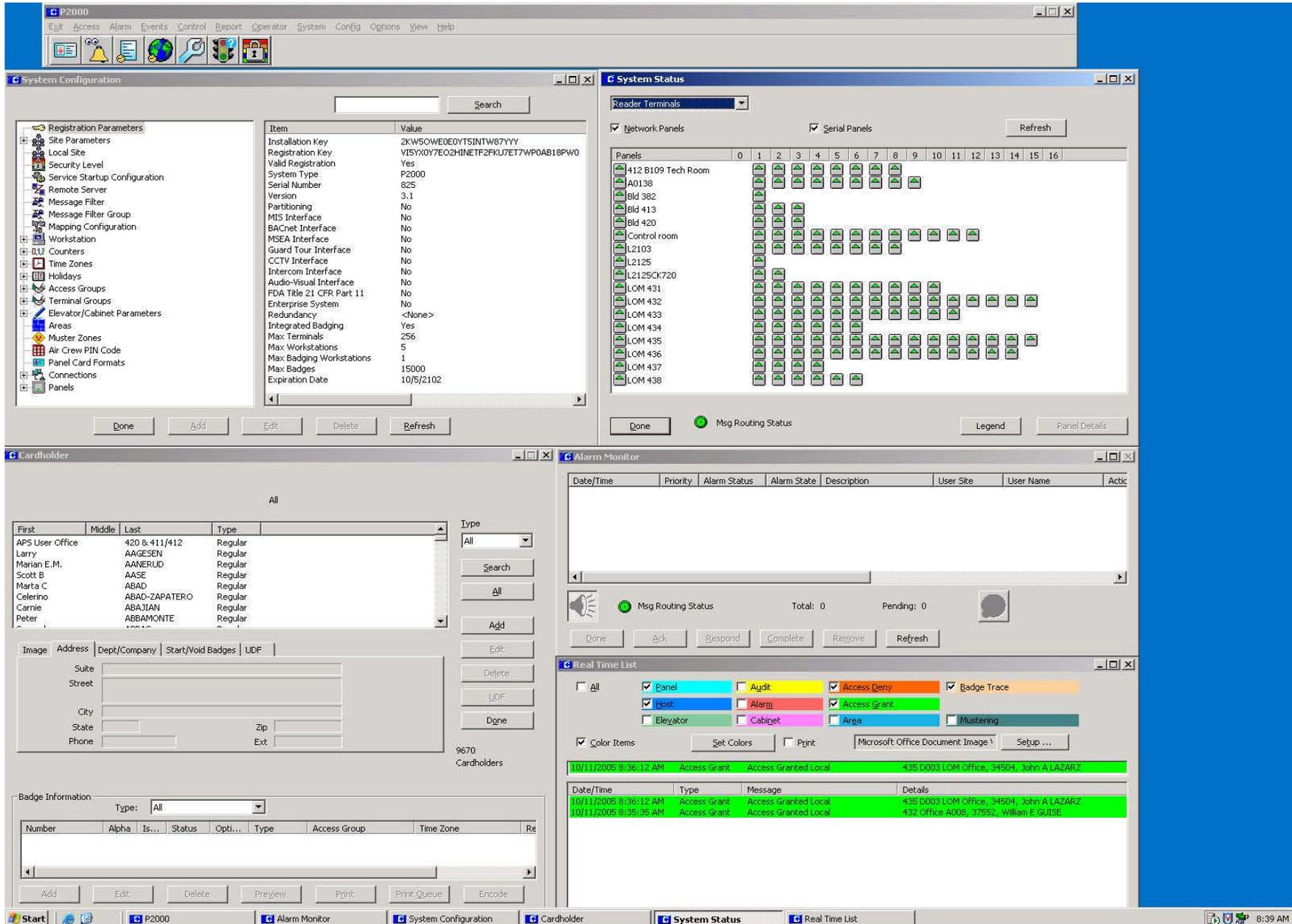
APS CARDKEY ACCESS CONTROL SYSTEM

APS CARDKEY ACCESS CONTROL SYSTEM



Oct. 4, 2005

Terminal Status



The screenshot displays the P2000 software interface with several active windows:

- System Configuration:** Shows a tree view on the left and a list of parameters on the right.

Item	Value
Installation Key	2KWSOWE0E0YTSINTW87YYY
Registration Key	VISYX0Y7EO2HINETF2FKU7ET7WP0AB18PW0
Valid Registration	Yes
System Type	P2000
Serial Number	825
Version	3.1
Partitioning	No
MIS Interface	No
BACnet Interface	No
MSEA Interface	No
Guard Tour Interface	No
CCTV Interface	No
Intercom Interface	No
Audio-Visual Interface	No
FDA Title 21 CFR Part 11	No
Enterprise System	No
Redundancy	<None>
Integrated Badging	Yes
Max Terminals	256
Max Workstations	5
Max Badging Workstations	1
Max Badges	15000
Expiration Date	10/5/2102
- System Status:** Displays a grid of terminal status for various panels.

Panels	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
412 B109 Tech Room	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲
A0138	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲
Bld 382	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲
Bld 413	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲
Bld 420	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲
Control room	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲
L2103	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲
L2125	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲
L2125CK720	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲
LOM 431	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲
LOM 432	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲
LOM 433	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲
LOM 434	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲
LOM 435	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲
LOM 436	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲
LOM 437	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲
LOM 438	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲
- Cardholder:** Lists cardholders with search and management options.

First	Middle	Last	Type
APS User Office		420 & 411/412	Regular
Larry		AAGESEN	Regular
Marian E.M.		AANERUD	Regular
Scott B		AASE	Regular
Marta C		ABAD	Regular
Celerino		ABAD-ZAPATERO	Regular
Carrie		ABAJIAN	Regular
Peter		ABBAMONTE	Regular
- Alarm Monitor:** Shows a table for active alarms and a status indicator for message routing.

Date/Time	Priority	Alarm Status	Alarm State	Description	User Site	User Name	Action
[Empty Table]							
- Real Time List:** Displays a log of recent access events.

Date/Time	Type	Message	Details
10/11/2005 8:36:12 AM	Access Grant	Access Granted Local	435 D003 LOM Office, 34504, John A LAZARZ
10/11/2005 8:36:12 AM	Access Grant	Access Granted Local	435 D003 LOM Office, 34504, John A LAZARZ
10/11/2005 8:35:35 AM	Access Grant	Access Granted Local	432 Office A008, 37552, William E GUISE

Other Areas of IT Group Support

■ *Meetings and Conferences:*

- *Computer Projectors,*
- *Network, and Wireless Connections.*

■ *Argonne Guest House:*

- *Guest Support for Network and Wireless.*
- *Network Maintenance And Upgrades.*

■ *APS Video:*

- *IT Group Status Displays.*
- *Coordination of IITV Classes.*

■ *CAT Beamline Cabling Support Sectors 24 & 30*

■ *CNM Beamline Cabling Support*

■ *Nextel:*

- *Involvement with Installation of Fiber Optic Cable for Cell Phone Repeaters in Experimental Hall.*