

# PCGenesis Future: Migration to a Relational Database

GASBO  
Augusta, GA  
November 6, 2019



Richard Woods, Georgia's School Superintendent  
*"Educating Georgia's Future"*

11/14/2019

# PCGenesis DATA storage

## CURRENT

- 98% : Microfocus Vision  
Version 3 Indexed  
Sequential  
*note:*  
*(Version 3 is no longer supported by Microfocus)*
- 1% - Microsoft SQL Server  
Express Relational  
Database

## FUTURE

- 99% - Microsoft SQL Server  
Express Relational  
Database

## DISTANT FUTURE

- User friendly Screens

# Why migrate to a Relational Database?

## ADVANTAGES

- 1) **Simplicity**
- 2) **Concurrency**
- 3) **Ease of Data Retrieval**
- 4) **Limitless Indexing**
- 5) **Transaction Processing (ACID)**
- 6) **Security**
- 7) **Client Supportive**
- 8) **Database Management Tools**
- 9) **Scalability and Flexibility**
- 10) **Data Analysis**
- 11) **Technical Support in the future**
- 12) **Lower licensing cost** (SQL Express free!)
- 13) **Can trigger log of every user database change**

# Relational Database Migration

## CHALLENGES

- 1) Users tend to resist any change
- 2) Requires commitment by the DOE
- 3) Learning curve for developers, COBOL + SQL



# Advantages of a Relational Database

## Simplicity

- The relational model structures data in a manner that avoids complexity.
- The table structure is an intuitive organization familiar to most users, particularly those who have worked with software spreadsheets, check registers or other tabular data.

# Advantages of a Relational Database

## Concurrency

- In the current file system management, there is no control over Multi-user access to data. Concurrent updates may lead to data corruption.
- In modern Database Management Systems, we can concurrently access data without fear of data corruption

# Advantages of a Relational Database

## Ease of Data Retrieval

- Structured Query Language (**SQL**) is the basis for relational database management systems.
- SQL is an intuitive and universal language used for all modern database access

# Advantages of a Relational Database

## Indexing

- Searching for particular information in a huge amount of data, such as the Vision Audit file, is a tedious job
- Indexing is the process of ordering database entries
- It helps to improve the **speed** of data retrieval operations
- Indexing makes searching quicker

# Advantages of a Relational Database

## Supports Transaction Processing

- A transaction is a logical, atomic unit of work that contains one or more SQL statements (data changes). A transaction groups SQL statements so that they are either all committed, which means they are applied to the database, or all rolled back, which means they are undone from the database.

Example: Posting an invoice against a purchase order constitutes an entire “transaction”

# Advantages of a Relational Database

## 5) Transaction Processing: (A

- **Atomicity:**

- An atomic transaction is an indivisible and irreducible series of database operations such that either all occur or nothing occurs
- If the invoice is created in the EXPENSE file, but not posted to the AUDIT file, the entire transaction is aborted
- Everything posts or nothing posts!

# Advantages of a Relational Database

## 5) Transaction Processing: (AC

- **Consistency:**

- The requirement that any given database transaction must change affected data only in allowed ways.
- Data written to the database must be valid according to all **defined rules**, including constraints, cascades, triggers, and any combination thereof.
- This ensures that programming errors cannot result in the violation of any defined database constraints.

# Advantages of a Relational Database

## 5) Transaction Processing: (ACI

- **Isolation:**

- This is defined at database level as a property that defines how/when the changes made by one operation become visible to others.
- If multiple transactions are executing, one transaction should not interfere with another transaction.
- If someone is entering invoices, and somebody else is running invoice reports they won't interfere with each other.

# Advantages of a Relational Database

- **Durability:**

- This guarantees that transactions that have been **committed** will survive permanently.
- The database ensures that all the changes are saved after completion of the transaction.

# Advantages of a Relational Database

## TRIGGERS CAN LOG EVERY DATA CHANGE

- SQL has a feature called a Trigger which can be easily enforced to write a record to a history table every time there is a database change.
- Reports can be generated showing who made a data change, and exactly when they made the change.

# Advantages of a Relational Database

## Security

- Despite having the ability to add multiple users and accounts, Microsoft SQL Server provides sensible security measures to restrict access when necessary.
- Administrators can determine which individual users have access, along with what level of authorization they're provided (view only or update).

# Advantages of a Relational Database

## Client Supportive

- Database data becomes available to use with Excel, Access and other common report engines.
- We can use any programming language to access a SQL Server PCGenesis database.
- Once the Database is operational, it is relatively easy to enact a new user friendly front end.

# Advantages of a Relational Database

## Database management tools

If a server crash occurs, SQL Server has automatic recovery features that go into effect, without the need for an administrator to intervene.

SQL Server will automatically launch database restoration to the last state of consistency.

With the release of the Verradyne software, you already have 'SQL Server management tools' installed.

Person_Degree (PER)	
PER_DEGREE_ID	
Person_ID	
University_College_Code_ID	
Degree_Code_ID	
Degree_Date	

Person_Teaching_Experience (PER)	
Teaching_Exp_ID	
Person_ID	
Years_Of_Experience_Local_IN	
Years_Of_Experience_Local_OUT	
Years_Of_Experience_State	

Person_Emergency_Contacts (PER)	
Emergency_Contacts_ID	
Person_ID	
Spouse_Name	
Next_Of_Kin_Name	
Next_Of_Kin_Relationship	
Next_Of_Kin_Phone	
Emergency_Contact	
Emergency_Relationship	
Emergency_Phone	
Doctor_Name	
Doctor_Phone	
Comment	

Person (PER)	
Person_ID	
SSN_ID	
Name_Last	
Name_First	
Name_Middle	
Name_Prefix	
Name_Suffix	
Gender	
Marital_Status	
Address_line1	
Address_line2	
Address_City	
Address_State	
Address_Zip	
Address_GA_County_ID	
Phone_Number	
Cell_Number	
E_Mail_Address	
Ethnicity_ID	
Ethnicity_Hispanic_Latino_Flag	
Ethnicity_American_Indian_Flag	
Ethnicity_African_American_Flag	
Ethnicity_White_Flag	
Ethnicity_Asian_Flag	
Ethnicity_Hawaiian_Pacific_Flag	
Employee_Birth_Date	
Employee_Death_Date	
Spouse_SS_Num	
i_Lempno	

Person_Employee (PER)	
Person_Employee_ID	
Person_ID	
Work_Status_ID	
Pay_Location_ID	
Primary_Work_Location_ID	
Job_Classification_ID	
Job_Description_ID	
Pers_Job_Description_ID	
Pension_type_ID	
Employee_Hire_Date	
Employee_Rehire_Date	
Employee_Termination_Date	
Employee_Background_Check_Date	
Eligible_For_Rehire_Flag	
Termination_Code_ID	
EEOS_Job_Code_ID	
Sick_Bank_Participant_Flag	
Sub_Rank_ID	
Override_Exempt_from_Leave_Accrual_Flag	
Adjusted_Leave_Eligibility_Date	
Leave_Reason_Maximum_Days	
Normal_Hours_Worked_Per_Day	
Normal_Hours_Worked_Per_Week	
Normal_Days_Worked_Per_Week	
DOE_Pays_Employer_Contribution_For_TRS	
GH_Last_Action_ID	
Health_Insurance_Participation_Flag_ID	
Include_On_CPL_Flag	
GH_Eligible_Flag	
GH_BOE_Transfer	
Contract_Days	
Contract_Amt	
Cycle_Gross	
State_Salary_Annual	

Work_Status (t_lookup)	
Work_Status_ID	
Work_Status_Code	
Work_Status_Description	

Location (t_lookup)	
Location_ID	
Location_Code	
Location_Description	
Location_CPL_Eligible_Flag	

JOB_Classification (t_lookup)	
Job_Classification_ID	
Job_Classification_Code	
Job_Classification_Description	
TRS_JOB_Classification_ID	
Certified_ID	
Instructional_ID	
Paraprofessional_ID	
Work_Schedule_Type_ID	
Num_Pay_Periods	

PENSION_TYPE (t_lookup)	
PENSION_TYPE_ID	
PENSION_TYPE_Code	
PENSION_TYPE_Description	

JOB_Description (t_lookup)	
----------------------------	--



# Advantages of a Relational Database

## Scalability and Flexibility

Relational databases are easy to 'scale'. That means it will work for applications with a lot of data, as well as with a little data.

### Data processing can be separated from presentation layer.

- With the current PCGenesis Vision files, processing the data as well as creating the screen display is coded in Cobol programs in an intertwined manner. This makes it difficult to make changes to one without affecting the other. This is not efficient.
- SQL Server has the ability to do all necessary processing in stored procedures and serve the results to the presentation layer (front end).
- The presentation layer becomes simplified, since there is no longer complex data processing involved.

# Presentation Layer can follow design of familiar PCG flow

The screenshot displays two windows. The left window, titled "Business Applications MASTER", shows a menu with the following items:

- 1 -- Financial Accounting & Reporting System
- 2 -- Payroll System
- 3 -- Personnel System
- 4 -- Certified/Classified Personnel Information System
- 5 -- Budget System
- 30 -- System Utilities

Red arrows point from the first and fourth menu items to the "Financial Accounting & Reporting" and "CPI" menu items in the right window. The right window, titled "PC Genesis SQL", shows a menu with the following items:

- Financial Accounting & Reporting
- Payroll
- Personnel
- CPI
- Help
- Setup

The right window also features the Georgia Department of Education logo and the text "PC GENESIS".



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"Educating Georgia's Future"

Rel=18.01.00 10/29/2018 DOE000 CADEVSYS C:\SECOND CYAN

### Financial Accounting & Reporting MASTER1

FKey	Master Menu
1	-- Budget Account Master Menu
2	-- Purchase Order Processing Menu
3	-- Claim Processing Menu
4	-- Vendor Check Processing Menu
5	-- Revenue Account Master Menu
6	-- Accounts Receivable Processing Menu
7	-- Receipt Processing Menu
8	-- Cash Management & Investment Management Menu
9	-- Financial Reporting & Month/Yr-End Close Menu
10	-- Account Master Description File Menu
11	-- General Ledger Account Master Menu
12	-- Year End Processing Menu
13	-- Special Functions Menu
14	-- Vendor Master Menu
15	-- Source Master Menu
20	-- File Reorganization

Master    13.04.00

PC Genesis SQL DOE-ATENN-W10\SQLXPRESSPCG

Financial Accounting & Reporting    Payroll    Personnel    CPI    Help    Setup

- Budget Account Master
  - Account Inquiry
  - Account Add/Update
  - COA Code Maintenance
  - COA Code Relationships
  - Budget Load from External File
  - Detail of Expenditures on Individual Account
  - Fiscal Year Rollover
- Purchase Order Processing
- Claim Processing
- Vendor Check Processing
- Revenue Account Master
- Accounts Receivable Processing
- Receipt Processing
- Cash management & Investment Management
- Financial Reporting & Month/Yr-End Close
- Account Master Description File
- General Ledger Account Master
- Year End Processing
- Special Functions
- Vendor Master
- Source Master



PC GENESIS



Rel=18.01.00 10/29/2018 DOE 000 C:\DEVSY5 C:\SECOND CYAN ACCT0200

### Budget Account Inquiry

Vr Fnd F Prgm Fnct Objct Fcty B Addt'l  
19

PCG Select Budget Account

Option 1. Ent	19-100-0-1021-1000-11300-0198-0-000000 SUBS	0.00
a s	19-100-0-1041-1000-11300-0282-0-000000 SUBS	0.00
	19-100-0-1100-2700-18000-8012-2-000000 INTERSESSION DRIVERS	0.00
Option 2. Ent	19-100-0-1210-2210-81000-0105-3-000000 DUES AND FEES	1,352.30
lin	19-100-0-1210-2210-81000-8010-3-000000 DUES AND FEES	429.30
	19-100-0-1310-2220-11300-0111-0-000000 SUBS	0.00
Option 3. Ent	19-100-0-1310-2220-11300-0197-0-000000 SUBS	0.00
ite	19-100-0-1310-2220-11300-0198-0-000000 SUBS	0.00
	19-100-0-1310-2220-11300-0282-0-000000 SUBS	0.00
	19-100-0-1310-2220-16500-0111-0-000000 MEDIA SPEC	0.00
	19-100-0-1310-2220-16500-0197-0-000000 MEDIA SPEC	0.00
	19-100-0-1310-2220-16500-0198-0-000000 MEDIA SPEC	0.00
	19-100-0-1310-2220-16500-0282-0-000000 MEDIA SPEC	0.00
	19-100-0-1320-2600-89000-8012-7-000000 OTHER EXPENSES	0.00
	19-100-0-1320-2600-89000-8013-7-000000 OTHER EXPENSES	0.00
	19-100-0-1320-2700-11400-8012-0-000000 SUBS	0.00
	19-100-0-1320-2700-14200-8012-0-000000 CLERICAL	1,207.35

Filter string for account: Account  
Vr Fnd F Prgm Fnct Objct Fcty B Addt'l Status Filter  
19 XXX X XXXX XXXX XXXX XXXX X XXXXXX A

Account Inquiry = F14 = Help for Acct Codes, F16 = EXIT

Rel=18.01.00 10/29/2018 DOE 000 C:\DEVSY5 C:\SECOND CYAN ACCT1

### Budget Account Inquiry

Vr Fnd F Prgm Fnct Objct Fcty B Addt'l  
19 603 0 9600 3100 61000 0282 0 000000

Title: HS Supplies  
Fund Balance Acct: 740

Begin Date	End Date	Status
7/01/18	6/30/19	R

Org Budget	Budget	Expended
29,000.00	2,416.66	1,866.23
	Aug	2,416.67
	Sep	2,416.67
	Oct	2,416.67
	Nov	2,416.67
	Dec	2,416.67
	Jan	2,416.66
	Feb	2,416.67
	Mar	2,416.66
	Apr	2,416.67
	May	2,416.66
	Jun	2,416.67
	Total	2,374.53

Ttl Expended 2,374.53  
Encumbered 0.00  
Balance 26,625.47

Budget 033% \*\*\*\*\*  
Expend 088% \*\*\*\*

F16-Exit, F17-Print Screen

Financial Accounting & Reporting Payroll Personnel CPI Help Setup

### Financial Account Inquiry

Year: 2019

Fund: 603 - SFS-MCHS Program: 9600 - SFS UNDISTRI. Function: 3100 - EXP SCHOOL NUTR

Object: Select Object... Facility/Building: Select Facility/Building...

Line	YY Fnd Prgm Fnct Objct Fcty B Addt'l	Account Name	Budget	Expended	Remaining	Status
9.	19-603-0-9600-3100-33200-0282-0-000000	HS FP	49.00	0.00	0.00	A
10.	19-603-0-9600-3100-41000-0282-0-000000	HS Water/Sewer	300.00	25.00	0.00	A
11.	19-603-0-9600-3100-43000-0282-0-000000	HS Rep/Maint.	10,000.00	1,155.52	0.00	A
12.	19-603-0-9600-3100-49000-0282-0-000000	HS Purch/prof	0.00	0.00	0.00	A
13.	19-603-0-9600-3100-52000-0282-0-000000	HS Ins Bonds	500.00	200.00	0.00	A
14.	19-603-0-9600-3100-53000-0282-0-000000	HS Postage & phone	50.00	0.00	0.00	A
15.	19-603-0-9600-3100-58000-0282-0-000000	HS Travel	100.00	0.00	0.00	A
16.	19-603-0-9600-3100-59100-0282-0-000000	HS Commodity Hauling	1,200.00	0.00	0.00	A
17.	19-603-0-9600-3100-61000-0282-0-000000	HS Supplies	29,000.00	2,374.53	0.00	A
18.	19-603-0-9600-3100-61100-0282-0-000000	HS Computer Supplies	100.00	0.00	0.00	A
19.	19-603-0-9600-3100-61200-0282-0-000000	HS Computer Software	0.00	0.00	0.00	A
20.	19-603-0-9600-3100-61500-0282-0-000000	HS Exp Equip	0.00	0.00	0.00	A
21.	19-603-0-9600-3100-61600-0282-0-000000	HS comp. equip	1,000.00	0.00	0.00	A
22.	19-603-0-9600-3100-62000-0282-0-000000	HS Electricity	10,000.00	0.00	0.00	A
23.	19-603-0-9600-3100-63000-0282-0-000000	HS Food Purchased	215,000.00	0.00	0.00	A
24.	19-603-0-9600-3100-63500-0282-0-000000	HS Food Acquisitions USDA	43,811.00	0.00	0.00	A
25.	19-603-0-9600-3100-73000-0282-0-000000	HS Other Equip.	10,000.00	0.00	0.00	A
26.	19-603-0-9600-3100-73400-0282-0-000000	HS Purch. Comp.	0.00	0.00	0.00	A
27.	19-603-0-9600-3100-81000-0282-0-000000	HS Registration	1,900.00	0.00	0.00	A
28.	19-603-0-9600-3100-89000-0282-0-000000	HS Other Exp.	600.00	0.00	0.00	A

< Prev Page 1 of 1 Next > 1 Display 50 records per page. Go to Page: 1 Go 28 record(s) meeting criteria.

YY Fnd Prgm Fnct Objct Facility/B Addt1 Begin Date End Date Status  
19 603 9600 3100 61000 0282 0 000000 07/01/2018 06/30/2019 A Edit...

Title: HS Supplies  
Fund Balance Acct: 740

Budget	Expended
Original Budget 29,000.00	Jul 2,416.66 1,866.23
----- Accrual Based -----	Aug 2,416.67 508.30
	Sep 2,416.67
Adjusted Budget 29,000.00	Oct 2,416.67
Claims 161.00	Nov 2,416.67
Disbursed 2,213.53	Dec 2,416.67
	Jan 2,416.66
Total Expended 2,374.53	Feb 2,416.67
Encumbered 0.00	Mar 2,416.66
Remaining Funds 26,625.47	Apr 2,416.67
	May 2,416.66
	Jun 2,416.67
	Total 29,000.00 2,374.53

Budget 33%   
Expend 8%

**19-603-0-9600-3100-61000-0282-0-000000**

Expenditure Detail Report:

Detail of Expenditure Report: 19-603-0-9600-3100-61000-0282-0-000000

25502

Report Date: 10/29/2018 11:06:47 AM

Print | Print Layout | Page Setup | Excel | PDF | Word

**DETAIL OF EXPENDITURES BY ACCOUNT**

ACCOUNT: 19-603-0-9600-3100-61000-0282-0-000000

VENDOR-SEQ	VENDOR NAME	DATE	AMOUNT	TOTAL CLAIM	STATUS	CHECK NO
00112234-9876	ACME Corporation	07/18/2018	154.00	154.00	PAID	14183
12123452-6543	Lunchables Inc.	07/18/2018	161.00	161.00	PAID	14180
23215489-0922	Lead Pencil Supplies Inc.	08/03/2018	161.00	161.00	OPEN	
23154683-4318	Peoples Paper LLP	07/16/2018	46.00	107.00	PAID	14172
45831795-3218	Myers Cables	07/20/2018	144.04	144.04	PAID	14186
27651908-9080	Frontier & Company	08/01/2018	118.33	118.33	PAID	14215
23570883-0909	Nexus Supplies	08/06/2018	191.52	351.66	PAID	14218
34265667-4325	Roundtree & Squaretree	07/30/2018	1,105.36	2,332.28	PAID	14199
12436767-2536	Diamond Pearl LLP	07/26/2018	161.00	161.00	PAID	14194
34563214-4532	AT&T	08/03/2018	132.28	132.28	PAID	14217
56789436-3457	Best Landscaper	07/31/2018	94.83	94.83	CANCELLED	
****TOTAL****			2,469.36			

List/Show Personnel

Active    Inactive    Terminated   
  CPI    Not CPI  
 Employee    3rd Party Contractor

Name/SSN:  Filter

Line	Name	SS Num	Status	CPI	Emp	3rd
10.	Armstrong, Christopher Everett	155 55 5119	Active	Y	Y	N
11.	Arroyo, Emerson Terrence	438 55 3888	Active	Y	Y	N
12.	Ashley, Jeramiah Terrell	817 55 1787	Active	Y	Y	N
13.	Atkins, Scarlett Taylor	165 55 5542	Active	Y	Y	N
14.	Avery, Jonathan Jeffrey	197 55 9762	Active	Y	Y	N
15.	Ayala, Kyler Harold	624 55 2412	Active	N	Y	N
16.	Baker, Amelia Rosemary	402 55 0292	Active	Y	Y	N
17.	Baldwin, Celia Marie	687 55 8706	Active	N	Y	N
18.	Barker, Luke Brandon	834 55 3499	Active	N	Y	N
19.	Barnett, Timothy Sidney	142 55 2941	Active	Y	Y	N
20.	Barrera, Desmond Richard	206 55 6271	Active	Y	Y	N
21.	Barrera, Joseph Wilson	228 55 8987	Active	Y	Y	N
22.	Barrett, Ruben Michael	186 55 6199	Active	Y	Y	N
23.	Barron, Lillian Edith	165 55 5834	Active	N	Y	N
24.	Bass, Marvin Sidney	110 55 0590	Active	Y	Y	N
25.	Bates, Clarence Adrian	127 55 7428	Active	Y	Y	N
26.	Bates, Roger Jared	782 55 8235	Active	N	Y	N
27.	Baxter, Alma Lillianna	131 55 1945	Active	Y	Y	N
28.	Baxter, Fletcher Marcos	157 55 7362	Active	Y	Y	N
29.	Baxter, Mark Jude	123 55 3911	Active	Y	Y	N
30.	Bean, Barbara Cecilia	851 55 5180	Active	Y	Y	N
31.	Bean, Belinda Tess	364 55 6435	Active	Y	Y	N
32.	Beck, Yadira Anna	950 55 5090	Active	N	Y	N
33.	Becker, Marie Adeline	922 55 2289	Active	Y	Y	N
34.	Beltran, Anna Rosemary	179 55 9190	Active	Y	Y	N
35.	Benitez, Ernest Kenny	298 55 6007	Active	Y	Y	N
36.	Benson, Deborah Cristal	100 55 0696	Active	Y	Y	N
37.	Bentley, Jane Edith	190 55 0238	Active	N	Y	N
38.	Benton, Graham Derick	172 55 2184	Active	Y	Y	N
39.	Beny, Derick Jeremv	213 55 3057	Active	Y	Y	N

564 met search criteria.

\*\*\* Active \*\*\*

**Becker, Marie Adeline**      922-55-2289

**BUS DRIVER - SEP: SUBSTITUTE PERSONNEL**

Person Information   Employment Record   CPI Information   Earnings History   Education/Experience

### Person Information

Prefix    
 First Name    
 Middle    
 Last Name    
 Suffix

SSN    
 Birth Date    
 Gender  Male    Female   
 Marital Status  Married    Single   
 Death Date

Address  
 Street address (Line 1)    (Line 2)   
 City    State    Zip  -   
 County

Contact   Home Phone    
 Cell Phone    
 E-mail

Demographic EEO-5 and CPI Ethnic/Race  
 Ethnic:

Hispanic/Latino Ethnicity   
 Race (Select all that apply)  
 Am Indian Alaskan    Black    White    Asian    Hawaiian Pacific

The Hispanic/Latino Ethnicity field is necessary in order to support EEO-5 reporting and file transmission to the Federal government.  
 The Race field is necessary in order to support EEO-5 reporting and file transmission to the Federal government.



PC Genesis SQL DOE-ATENN-W10\SQLXPRESSPCG

Financial Accounting & Reporting Payroll Personnel CPI Help Setup

List/Show Personnel

Active  Inactive  Terminated  CPI  Not CPI

Employee  3rd Party Contractor

Name/SSN:  Filter

Line	Name	SS Num	Status	CPI	Emp	3rd
1.	Acosta, Charlotte Catherine	526 55 2605	Active	Y	Y	N
2.	Acosta, Jaden Tanner	159 55 9322	Active	Y	Y	N
3.	Alexander, Javon Robert	646 55 4698	Active	Y	Y	N
4.	Allison, Elliot Graham	705 55 8697	Active	Y	Y	N
5.	Alvarado, Desmond Conrad	395 55 9535	Active	Y	Y	N
6.	Alvarez, Jeremy Ethan	165 55 5891	Active	N	Y	N
7.	Anderson, Kylan Kaleb	585 55 8557	Active	N	Y	N
8.	Andrews, Bernard Wilson	160 55 0171	Active	N	Y	N
9.	Anthony, Graham Alexander	737 55 3706	Active	N	Y	N
10.	Armstrong, Christopher Everett	155 55 5119	Active	Y	Y	N
11.	Arroyo, Emerson Terrence	438 55 3888	Active	Y	Y	N
12.	Ashley, Jeremiah Terrell	817 55 1787	Active	Y	Y	N
13.	Atkins, Scarlett Taylor	165 55 5542	Active	Y	Y	N
14.	Avery, Jonathan Jeffrey	197 55 9762	Active	Y	Y	N
15.	Ayala, Kyle Harold	624 55 2412	Active	N	Y	N
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17.	Baldwin, Celia Marie	687 55 8706	Active	N	Y	N
18.	Barker, Luke Brandon	834 55 3499	Active	N	Y	N
19.	Barnett, Timothy Sidney	142 55 2941	Active	Y	Y	N
20.	Barrera, Desmond Richard	206 55 6271	Active	Y	Y	N
21.	Barrera, Joseph Wilson	228 55 8987	Active	Y	Y	N
22.	Barrett, Ruben Michael	186 55 6199	Active	Y	Y	N
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26.	Bates, Roger Jared	782 55 8235	Active	N	Y	N
27.	Baxter, Alma Lillianna	131 55 1945	Active	Y	Y	N
28.	Baxter, Fletcher Marcos	157 55 7362	Active	Y	Y	N
29.	Baxter, Mark Jude	123 55 3911	Active	Y	Y	N
30.	Bean, Barbara Cecilia	851 55 5180	Active	Y	Y	N
31.	Bean, Belinda Tess	364 55 6435	Active	Y	Y	N
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33.	Becker, Marie Adeline	922 55 2289	Active	Y	Y	N

564 met search criteria.

\*\*\* Active \*\*\* **Becker, Marie Adeline** 922-55-2289

**BUS DRIVER - SEP; SUBSTITUTE PERSONNEL**

Person Information Employment Record CPI Information Earnings History Education/Experience

**Employment Record Log**

Emp ID	Status	Job Description	Primary Work Location	Hire Date	Termination Date	Re-Hire Date
1. 791	Active	BUS DRIVER - SEP	TRANSPORTATION FACILITY	09/12/1979		
2. 30791	Active	SUBSTITUTE PERSONNEL	SUBSTITUTE PERSONNEL	08/01/2012		
3. 90791	Terminated	PARAPROFESSIONAL - SEP	RANDOM COUNTY PRIMARY SC...	09/12/1979	05/30/2012	

Record Status: **A - Active** Emp No: **791**

Job Information Pay Processing Setup Health Insurance Tax/Pension Withholding Deductions Leave Y-T-O

**Job Information** Include on CPI?  Sick Bank Participant?

Rehire Date:  Termination Date:  Eligible for Rehire?

Hire Date:  9/12/1979

Background Check Date:

Pay Location: 8012 - TRANSPORTATION FACILITY

Primary Work Location: 8012 - TRANSPORTATION FACILITY

Annual Work Days: 178

Hours Per Day: 4 Days Per Week: 5 Hours Per Week: 20 Months/Yr: 10

Job Description: 000016 - BUS DRIVER - SEP

PERS Job Description: 000016 - BUS DRIVER - SEP

EE05 Job Code: A16 - Service Workers

Job Classification: 000016 - BUS DRIVER - SEP

TRS Job Classification: Unknown

Certified Status: Non-Certified

Paraprofessional Status: Non-Paraprofessional

Work Schedule: Full Time

Instructional Status: Non-Instructional

Number of Pay Periods: 12

Substitute Pay Rank: Not Applicable

**Salary** Cycle Gross: 962.04

State of GA funded Annual Salary:

Locally funded Annual Salary: 11,544.43

Other Funded Annual Salary:

Contracted Total Annual Amount: 11,544.43

Override\_Exempt\_from\_Leave\_Accrual?

Leave Reason maximum Days: 0.0000

Adjusted Leave Eligibility Date:



# Advantages of a Relational Database

## Data Analysis

- SQL Server combines impressive reliability with the ability to extract data when and where needed
- On-board reporting tools that support the creation of charts and graphics for rich, compelling presentations.
- Data can easily transfer into presentation modes or Excel, allowing users to quickly compile relevant data points into formats suitable for sharing with clients and partners.

# Advantages of a Relational Database

## Technical support in the future

- There are considerably more SQL Server developers available than Cobol/Vision programmers. Most Cobol programmers are nearing retirement.
- There are many free SQL courses online and it is much easier learn than COBOL.

# Converting PCGenesis to RDBMS

- Converting PCGenesis to a relational database is a very, very big project
- We estimate that it make take several years to convert the software
- During that timeframe, major enhancements to PCGenesis will be very limited
- Legislative requirements will always be addressed even during the conversion process

# PCGENESIS FUTURE

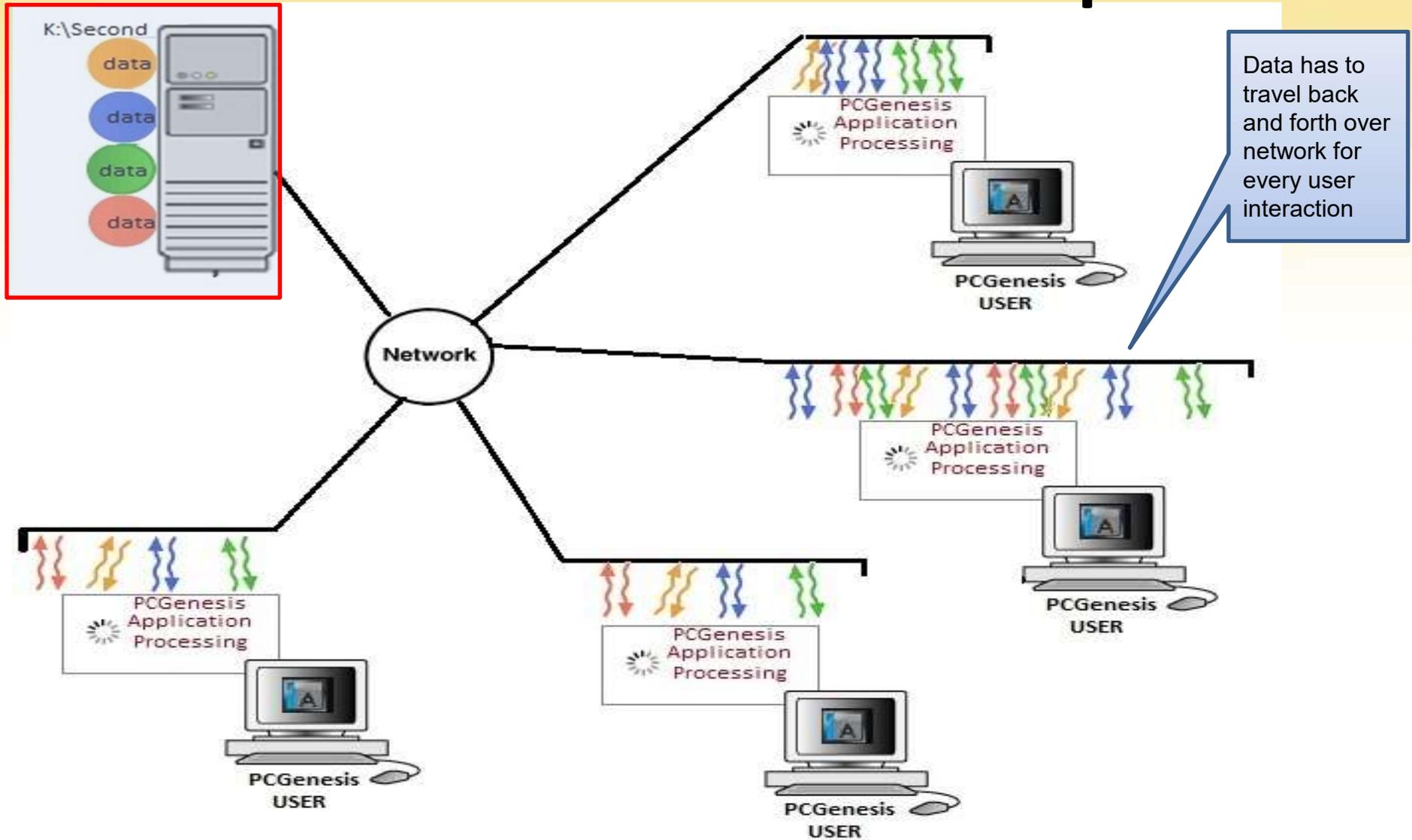
## Converting PCGenesis to RDBMS

- This is all great news for PCGenesis
- As a matter of fact, PCG is adding new school districts...
  - Two new charter school districts have come onboard
  - Two school districts have come back to PCGenesis from expensive 3<sup>rd</sup> party accounting systems

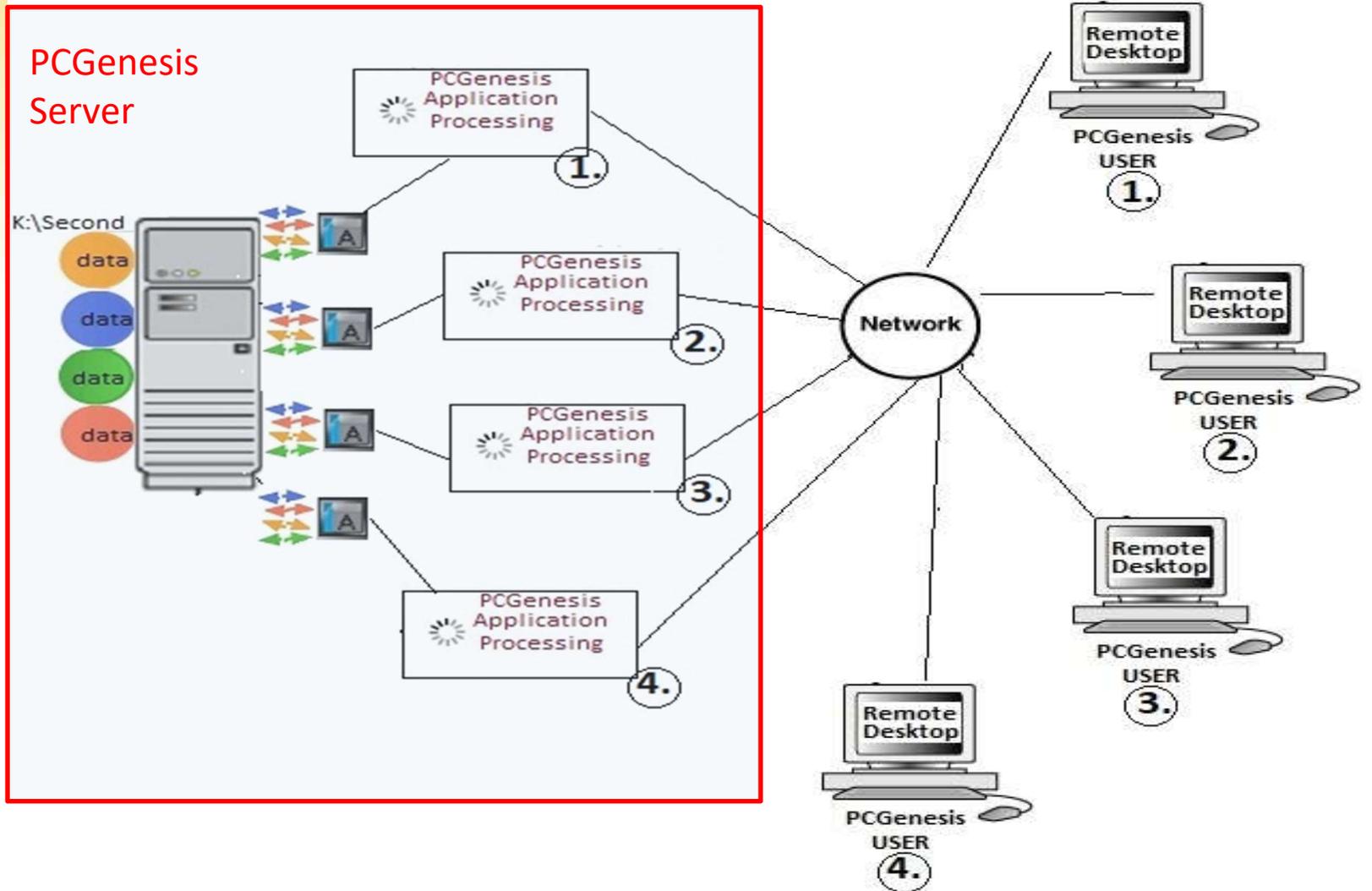
# Site Recommendations

- Upgrade any server > 5 years old
- Implement **Remote Desktop** access !!!!
- Weekly full system backup of **K:\\*.\*** (Retain 3 weeks)
- Daily backup of data (**K:\SECOND** and **K:\PCGSQldb**) to CD/DVD/USB (Retain for 1 month)

# PCGenesis run on User Computer



# PCGenesis through Remote Desktop



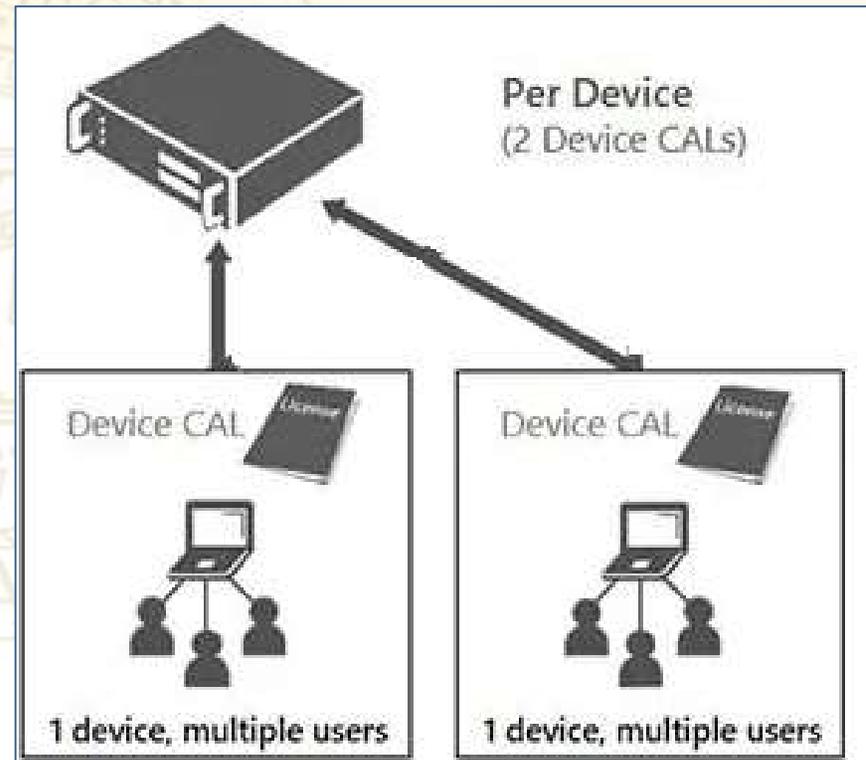
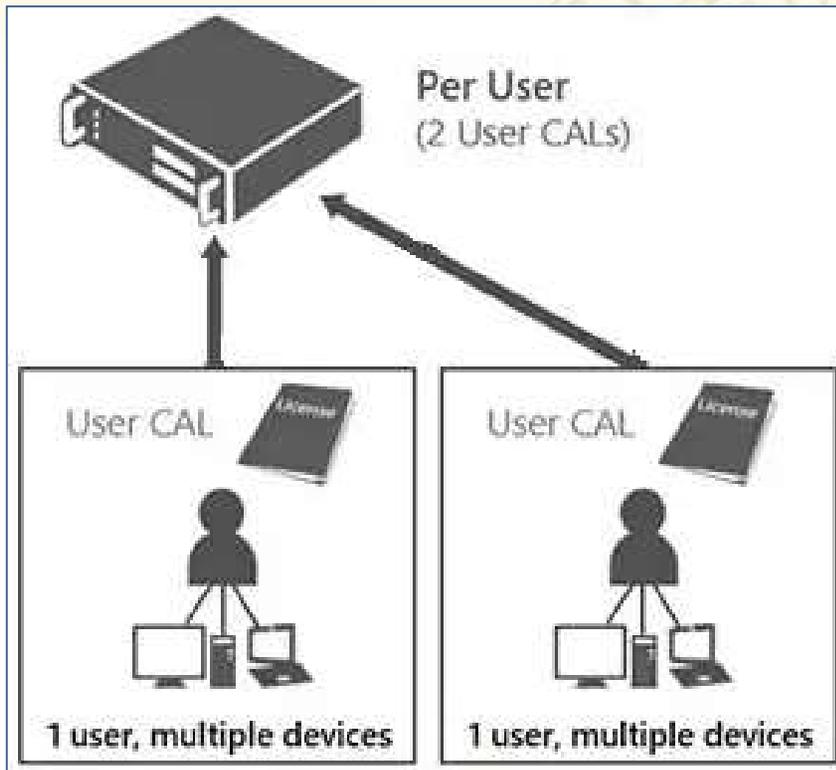
# Remote Desktop Licensing

## Client Access License (CAL)

**based on user**

1-User CAL \$199.00  
5-User CAL \$779.00

**based on device**



# Ransomware

## What is ransomware?

Ransom malware, or ransomware, is a type of malware that prevents users from accessing their system or personal files and demands ransom payment in order to regain access.



## How do you get ransomware?

The most common method today is through malicious spam, or malspam, which is unsolicited email that is used to deliver malware.

The email might include booby-trapped attachments, such as PDFs or Word documents. It might also contain links to malicious websites.

# How do you get ransomware?

## Transferred from connected devices

If Windows malware is on the smartphone, you plug it into your computer, and autorun is running, the Windows-based malware could start running and infect your machine.

Do not charge your devices using your USB port.



## Encrypting Ransomware

This is the one we have been seeing in our districts. The perpetrators snatch up your files and encrypt them, demanding payment in order to decrypt and redeliver. The reason why this type of ransomware is so dangerous is because once cybercriminals get ahold of your files, no security software or system restore can return them to you.

Unless you contact the cybercriminals and pay the ransom, they're gone. Even if you pay them, there is no guarantee will give you those files back.

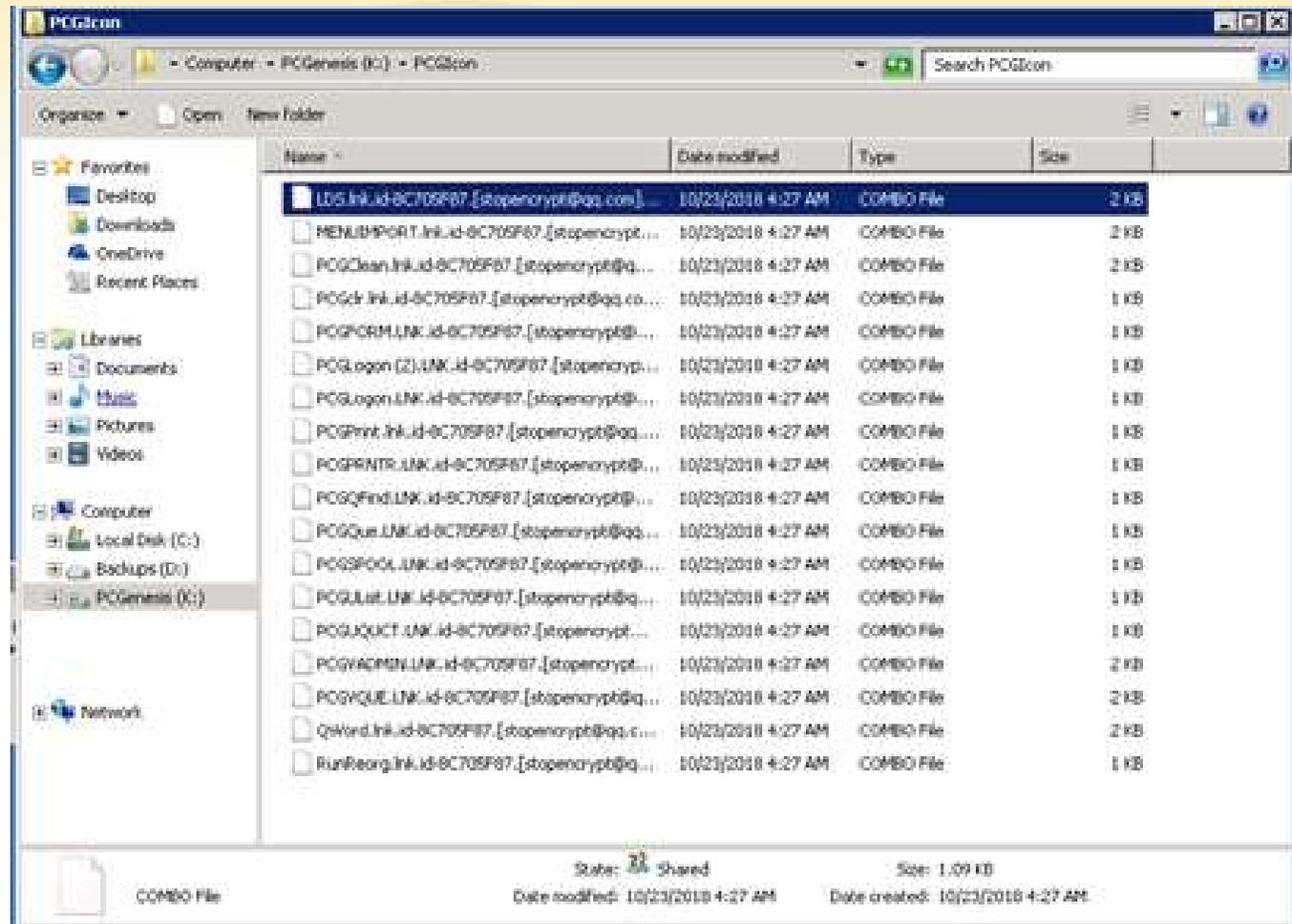
## Who do ransomware authors target?

When ransomware was first unleashed, its initial victims were sent to the general public.

However, they began to realize its full potential when they rolled out ransomware to businesses and now public institutions, such as school districts. Multiple Georgia districts have already been hit.

# How do you know if you have been infected?

Filenames will all be changed, nothing works and everything you click sends you to a website announcing to fix your files for a fee.



# What to do if infected?

The number one rule if you find yourself infected with ransomware is to **never pay the ransom.**

(This is now advice endorsed by the FBI.)

Nothing on a computer exposed to ransomware can be trusted. The computer must be completely reformatted.



# How to recover from a ransomware attack

- Due to multiple attacks, we now are in the process of streamlining the recovery effort.
- If you see your PCGicon folder files looking distorted, you have been infected. The entire PCGenesis server has been compromised and must be reformatted. Nothing on this server should be trusted.
- Please contact the DOE immediately for instructions on moving forward in the event of a ransomware attack.

# How to protect from ransomware

- Create secure daily backups of your PCGenesis data to a new thumb drive and label with date and time.
- Invest in cybersecurity—a program with real-time protection that’s designed to thwart advanced malware attacks such as ransomware. You should also look out for features that will both shield vulnerable programs from threats (an anti-exploit technology) as well as block ransomware from holding files hostage (an anti-ransomware component).

Be sure your systems and software are updated. The WannaCry ransomware outbreak took advantage of a vulnerability in Microsoft software. While the company had released a patch for the security loophole back in March 2017, many folks didn’t install the update—which left them open to attack.

- We recommend changing your settings to enable automatic updating.

# Backing up PCGenesis data files

BACKUP GUIDELINES		
✓	Step	Action
	1	<p>Include a <b>full backup</b> of <i>K:\*. *</i> in the site's standard server backup process</p> <ul style="list-style-type: none"> <li>▶ Recommend <b>full backup</b> of <i>K:\*. *</i> <u>every night</u> if possible               <ul style="list-style-type: none"> <li>• Minimum of one full backup of <i>K:\*. *</i> every week <b>(Required)</b></li> <li>• Retain at least 4 weeks of <i>K:\*. *</i> <b>(Required)</b></li> </ul> </li> </ul>
	2	<p>Daily backup of <i>K:\SECOND\*. *</i> and <i>K:\PCGSQldb\*. *</i> <b>(Required)</b></p> <ul style="list-style-type: none"> <li>• Use of CD, DVD, or USB is recommended</li> <li>• Nightly backup following each work day</li> <li>• Nightly media may remain under control of PCG administrator</li> <li>• Proper security and offsite storage measures <b>(Required)</b></li> <li>• Retain daily backups of <i>K:\SECOND\*. *</i> and <i>K:\PCGSQldb\*. *</i> for 4 weeks <b>(Required)</b></li> <li>• Retain one daily backup each month of <i>K:\SECOND\*. *</i> and <i>K:\PCGSQldb\*. *</i> for at least one year <b>(Required)</b></li> </ul>
	3	<p>PCGenesis data is <u>split</u> between files contained in the directory <i>K:\SECOND</i> and the <i>SQL Server</i> database tables located in <i>K:\PCGSQldb</i>. Therefore, it is very important to backup <i>K:\PCGSQldb\*. *</i> and <i>K:\SECOND\*. *</i> during the nightly backup. <b>One directory cannot be backed up without the other directory, and they must be maintained together.</b></p>

Thumb drives now can hold up to a terrabyte of data.

You can get multi packs of thumb drives cheaply eg 10 pack of 16 gig each for \$30

# Thank you for attending!



Richard Woods, Georgia's School Superintendent  
"Educating Georgia's Future"

11/14/2019

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