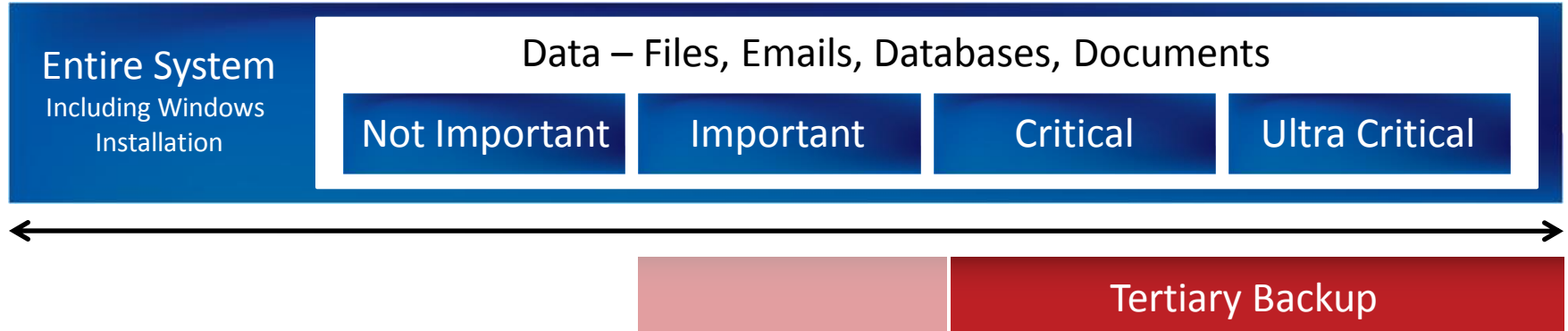


Tertiary Backups



Tertiary Backup

objective is automated offsite
backup of critical data

- Let's begin by recapping some of the “challenges” with Internet Backup...

Challenges with Internet Backup



Yet another piece
of software

*“More administrative
overhead and yet
another vendor.”*



Internet

Slow connection and
too much data

*“Will my data fit
through the pipe?”*



Potentially expensive hosting
fees & vendor lock-in

*“I want flexibility
choosing where to
host my data.”*

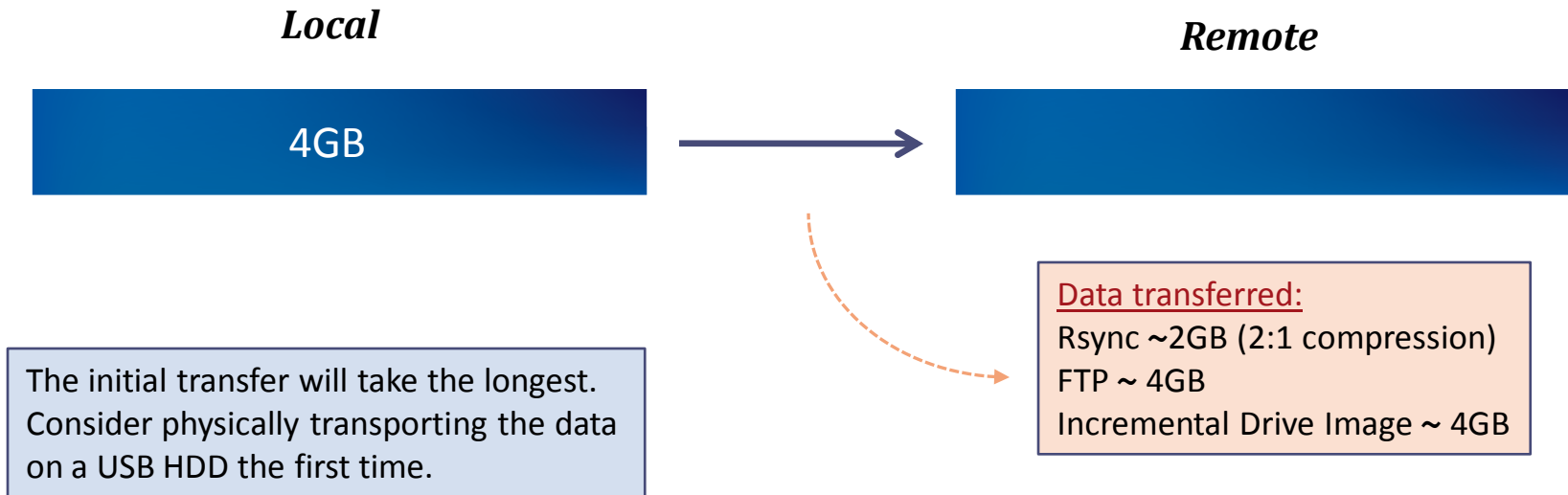
BackupAssist addresses all of these issues!

- The limited bandwidth problem is solved by using a bandwidth efficient backup method.

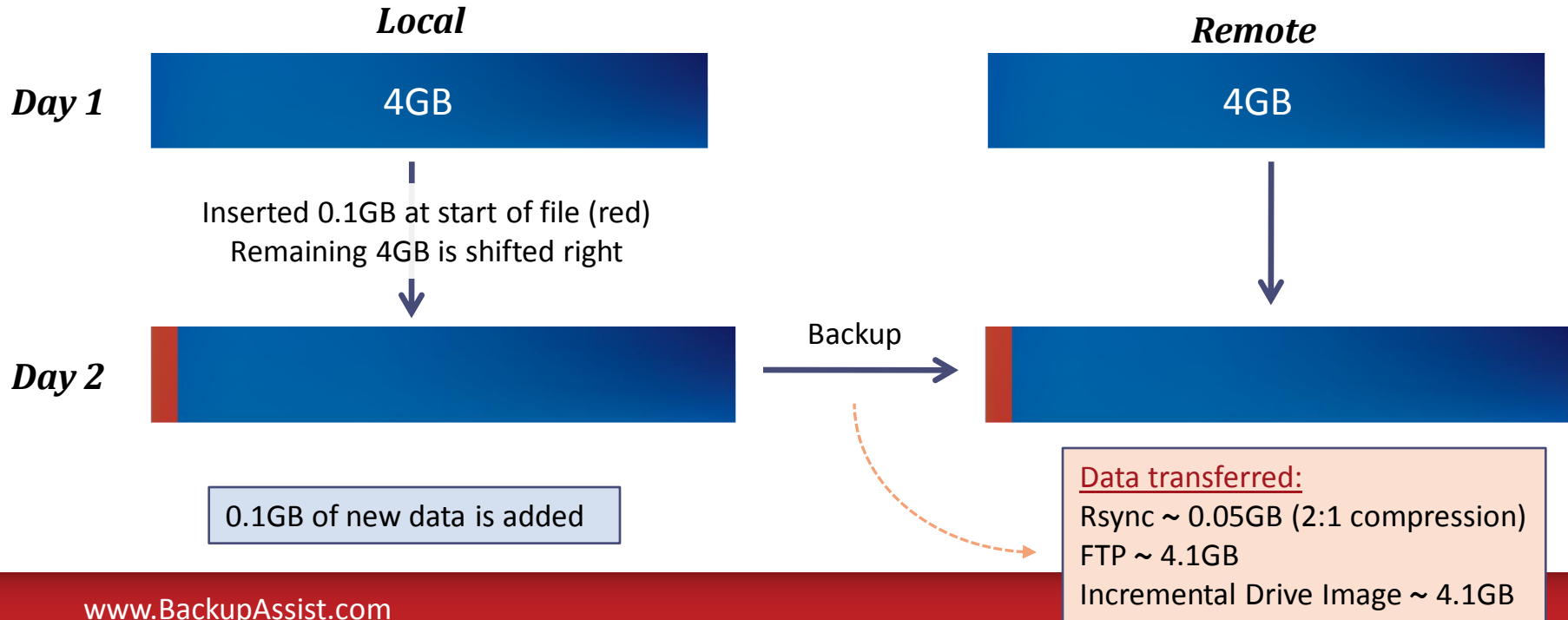
- What is bandwidth efficiency?
It means transferring only the minimum required information to reconstruct the data at the remote site

- Let's look at an example: a 4 gig file –
 - We'll compare performance of Rsync vs. FTP vs. Incremental Drive Image.
 - Assume that the data compresses 2:1 using ZIP compression.
 - We'll simulate 3 successive days of backups in the next few slides

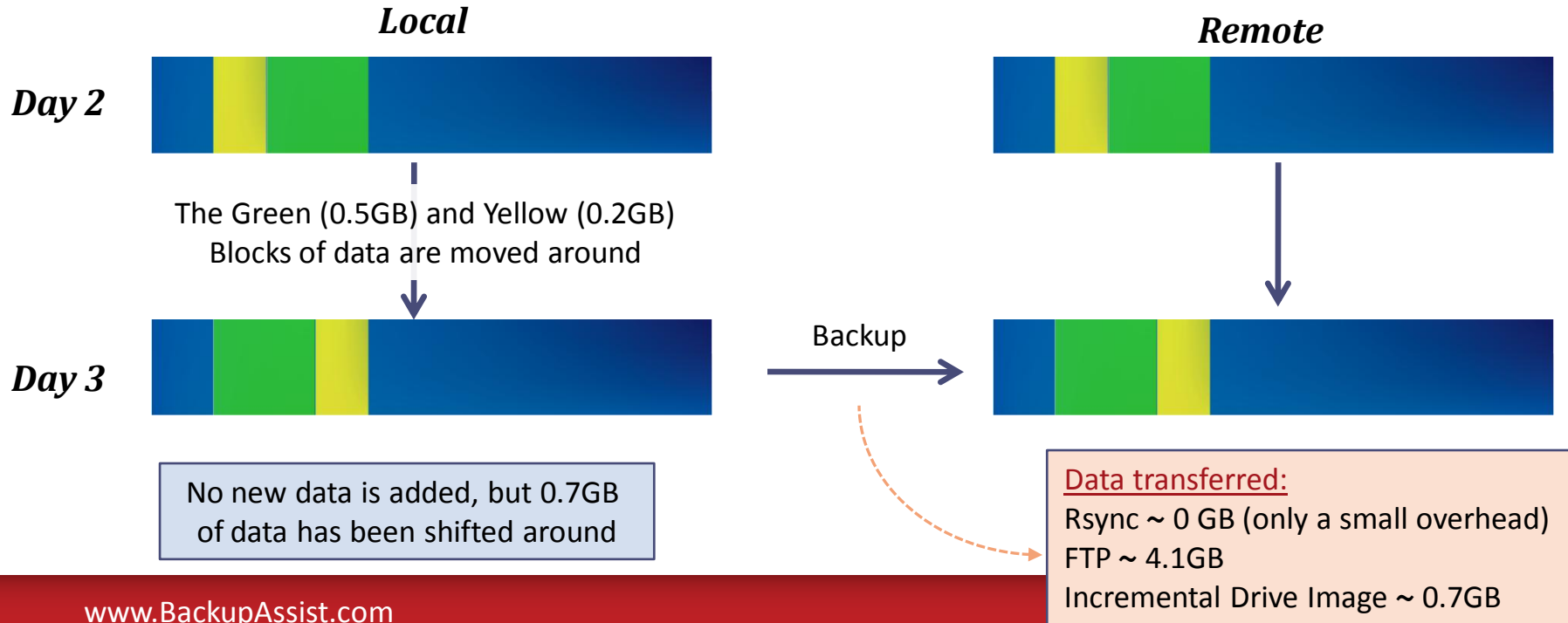
- Day 1 – the first backup. Nothing exists at the remote location, so a complete transfer is required.



- Day 2 – the second backup.
0.1GB is inserted at the start of the file (in red)



- Day 3 – the third backup.
The yellow and green blocks are shifted around



- The Rsync algorithm that's used in BackupAssist is bandwidth efficient and caters for all possible cases:
 - ▣ Inserted or added data
 - ▣ Removed data
 - ▣ Shifted data

- More effective than Incremental Drive Imaging, and dramatically more effective than FTP or File Copying

- Limited bandwidth problem solved!
(Actual real-life scenario performance analysis later in this presentation)

- Next problem: most Internet based backup offerings lock you into a particular data host which may be unappealing because of costs or limitations.
- Example quotation from major American provider:
 - ▣ Backing up 100 GB
 - ▣ US \$714 per month.. on a 36 month contract!

Name:	Linus Chang
Company:	Cortex IT
Title:	Mr
City:	Melbourne
State:	XX
Zip:	3128
Consultant:	No
Email:	[REDACTED]
Phone:	61398994681
<hr/>	
Quote Number:	20080227-9087-2300
Amount of Data:	100 GB
No. of Servers:	2
Remote Locations:	0
How Heard:	Other
Why Visited:	Just doing research on our options
Time Frame:	Within 3 months

As Low As per Month:
*For Data Volumes Larger than 150GB, See Below. \$714

- Solution: BackupAssist uses the Rsync Protocol – an open standard.

This give you **options** on where you want to host your data and how much it will cost:

- Professional data center in different state / country
- Rsync server behind Amazon S3 (www.s3rsync.com)
- DIY: remote branch offices, the boss' home – to any Windows or Linux machine, using existing Internet connections

- Revenue opportunity for I.T. Service providers:
use your existing data center to host your clients' data & make recurring revenue:
 - No ongoing service fees to the software vendor
 - No special hardware or software requirements
- Or if you don't have your own data center, you can resell others' services

- What is Rsync?
 - ▣ The most widely deployed, most widely used and original file-based bandwidth efficient remote synchronization tool
- BackupAssist adds the necessary features to provide a complete SMB backup solution:
 - ▣ VSS support
 - ▣ Backup schemes (for version history)
 - ▣ Scheduling
 - ▣ Reporting & monitoring
 - ▣ Straightforward, easy to use, easy to manage user interface that hides the underlying complexities

- Let's do some performance analysis – typical small business with 12 staff and 22 GB data

Excellent performance.
Typically 5 – 9 minutes
at 1Mbit.

Simply multiply the
numbers by 10 to get
an indication of how it
would perform for a
medium sized business
with 220 GB of data.

Date	Data protected		Changed files		Data sent over the wire (1 Mbit)	
	Num files	Size (GB)	Num files	Size (MB)	Size (MB)	Total time (mm:ss)
22 Sep 2008	63,752	22.3	55	4.9	5.9	4:44
19 Sep 2008	63,704	22.3	28	4.0	2.5	4:00
18 Sep 2008	63,689	22.3	37	10.3	5.0	5:02
17 Sep 2008	63,663	22.3	16	4.3	2.4	3:53
16 Sep 2008	63,657	22.3	19	3.3	3.0	3:57
15 Sep 2008	63,645	22.3	22	6.0	5.1	5:29
12 Sep 2008	63,640	22.3	90	475.2	284.8	56:00
11 Sep 2008	Problem with Internet connection; backup not run					
10 Sep 2008	63,610	22.0	39	41.7	11.3	5:35
9 Sep 2008	Problem with Internet connection; backup not run					
8 Sep 2008	63,602	22.0	47	40.2	24.8	8:29
4 Sep 2008	63,571	22.0	49	113.3	102.0	22:07
3 Sep 2008	63,542	22.0	46	56.6	19.2	6:57
2 Sep 2008	63,503	21.9	33	16.1	14.0	6:04
1 Sep 2008	63,510	21.9	22	11.2	11.1	5:23

■ Performance analysis – SQL database backup 4.2GB

One day of changes:
Matched 98% of original
Sent 0.56% of new file
4 minutes @ 1Mbit

Data Type	Original	New	Bytes sent	Network time @1Mbit
SQL Server Backup (Goldmine)	19/09/2008	22/09/2008	23,920 KB (1/ 180 th the original, or	4 mins
	4,290,147 KB	4,296,803 KB	0.56%) matched: 4,200,754KB (98% of original)	(normally 11 hrs 56 mins)

35 days of changes:
Matched 88% of original
Sent 4.4% of new file
29 minutes @ 1Mbit

Data Type	Original	New	Bytes sent	Network time @1Mbit
SQL Server Backup (Goldmine)	29/07/2008	15/09/2008	175,986 KB (1/ 24 th the original, or	29 mins
	3,981,096 KB	4,263,395 KB	4.4%) matched: 3484642KB (88% of original)	(normally 11 hrs 50 mins)

■ Performance analysis: Exchange Information Store Backup (using NTBackup)

One day of changes:
Matched 94% of original
Sent 3.0% of new file
20 minutes @ 1Mbit

Data Type	Original	New	Bytes sent	Network time @1Mbit
NTBackup	23/09/2008	24/09/2008	119,758 KB	20 mins
Exchange Info Store	3,935,349 KB	3,958,901 KB	(1/33 rd the original, or 3.0%) matched: 3,693,432 KB (94% of original)	(normally 11 hrs)

■ Performance analysis: NTBackup file (backup of files only)

One day of changes:
Matched 78% of original
Sent 11.0% of new file
2hrs 5mins @ 1Mbit

Data Type	Original	New	Bytes sent	Network time @1Mbit
NTBackup BKF (Files)	19/09/2008	22/09/2008	752,825 KB	2 hrs 5 mins
	6,805,191 KB	6,816,671 KB	(1/9 th the original, or 11.0%) matched: 5,274,713KB (78% of original)	(normally 18 hrs 56 mins)

35 days of changes:
Matched 76% of original
Sent 12.8% of new file
2hrs 21mins @ 1Mbit

Data Type	Original	New	Bytes sent	Network time @1Mbit
NTBackup BKF (Files)	29/07/2008	15/09/2008	850,342 KB	2 hrs 21 mins
	6,629,752 KB	6,783,404 KB	(1/8 th the original, or 12.8%) matched: 5051015 KB (76% of original)	(normally 18 hrs 50 mins)

■ Conclusion:

- Files & Folders – superb!
- Can replicate application backups offsite:
 - SQL databases – excellent!
 - Exchange Info Store – very good!
- Replicating an NTBackup backup of files – not so good (expect 10% to be sent on minimal changes). Instead, backup your files and folders directly!

Bandwidth effective Internet
backup of files & folders

Copying SQL, Exchange backups offsite

Copying NTBackup .bkf files offsite

Archival backup (versioning)

Bare metal system recovery

Internet based backup

Complete system backup

Application aware backup