



# High Availability Imperative for Real-time Manufacturing

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**Continuous  
Availability**



**Operational  
Simplicity**



**Financial  
Advantage**

# PLANTS DON'T STOP!



Oil & Gas

Pharmaceuticals



Mining & Minerals



Petro-Chemical



Pulp & Paper



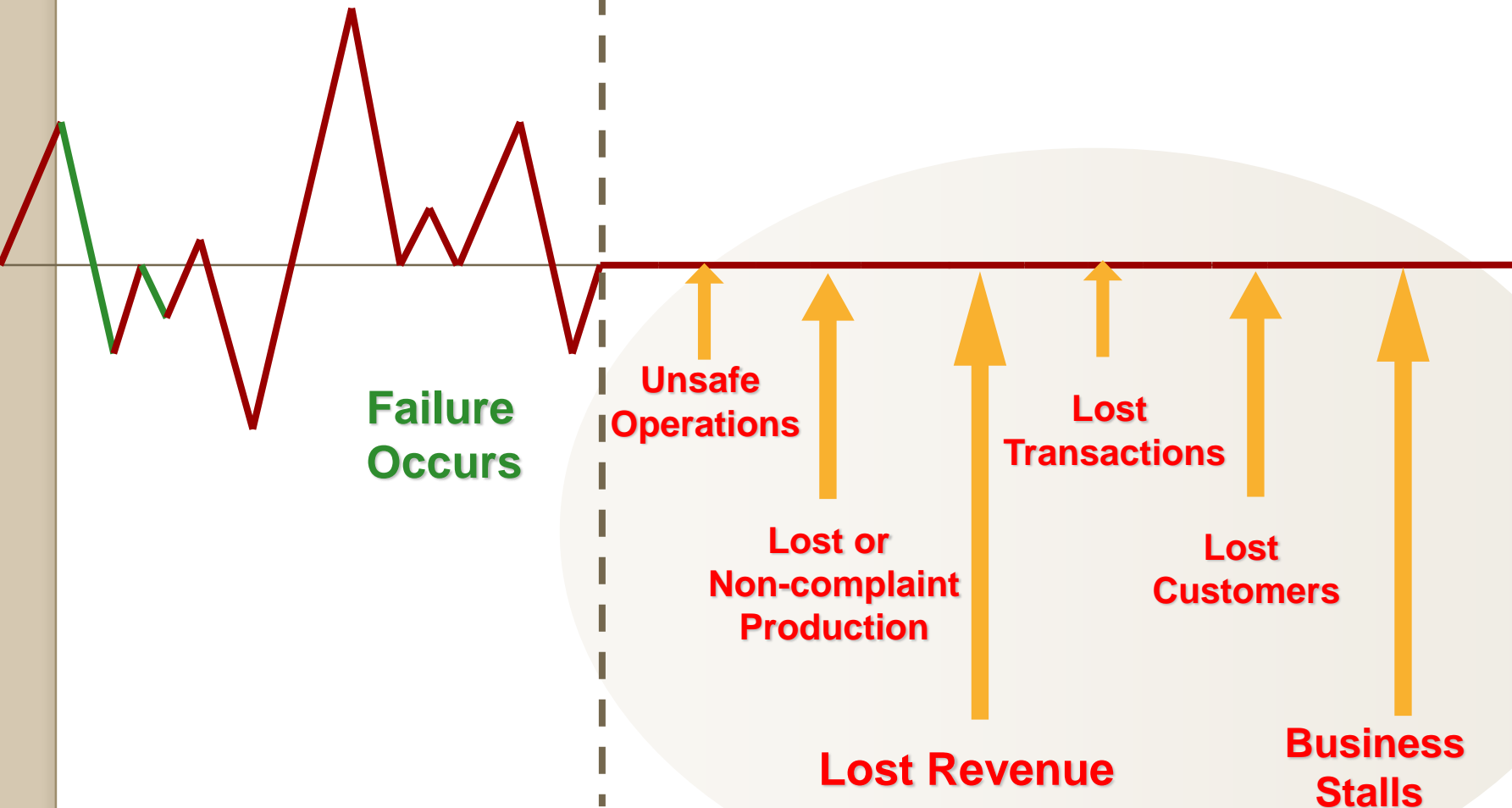
Food & Beverage



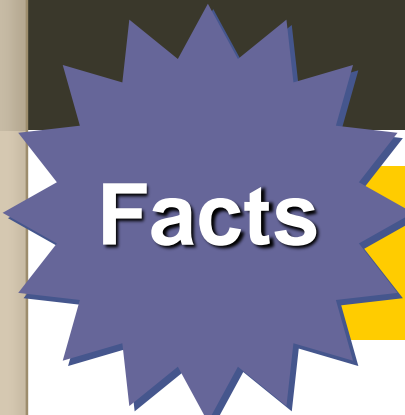
Power Generation Water Treatment

... and so does IT infrastructure

**BUT if it STOPS...**



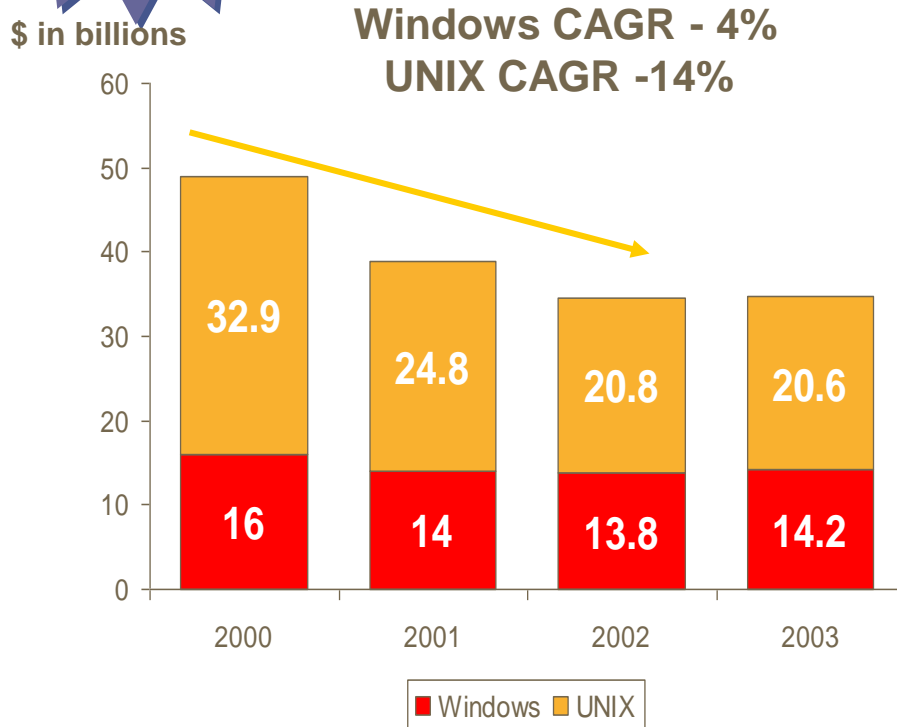
# Market Realities



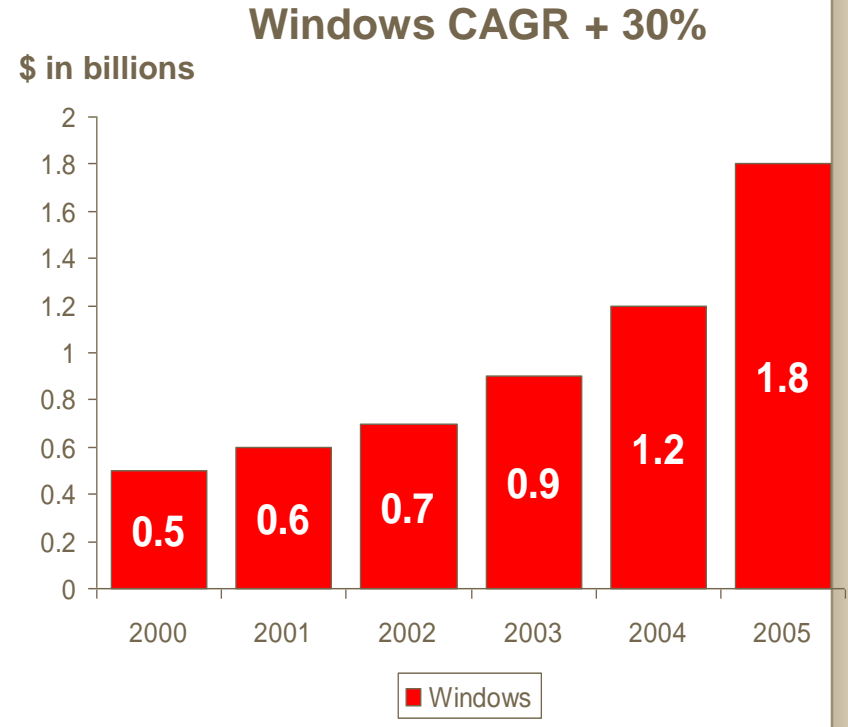
**Facts**

Overall server market for Windows® and UNIX® has declined

Availability Level 2-4 Windows server market is growing



Source: AL 0-4 IDC Server forecast March 03



Source: IDC and Stratus (update based on 8/02 AL2-4 IDC forecast and 3/03 IDC Server forecast)

# High Availability Options



Features	ftServer® System 99.999+%	Clusters 99.9 to 99.99%
System Architecture	<b>Lockstep Technology</b> Zero failover time Failure prevention	Minutes of failover Failure recovery
Resource Protection	<b>Failsafe Software</b> Protects memory & disk data Shields SW from transient HW errors	Protects ONLY disk data HW errors cause OS and application failures
Service technology	<b>ActiveService™ Architecture</b> Fault detection and isolation Hot-swappable components Built-in serviceability	Limited self diagnostics Limited hot-swappability Add-on serviceability
Deployment	Immediate	Script development/testing
Application Modification	None	Recommended
System Operation	Single system image Lights out operation	Multiple system images Requires IS Support

# High Availability in Manufacturing



## Industry Trends drive High Availability Needs

- Regulatory Compliance
  - FDA 21 CFR Part 11, FDA 21 CFR Part 820, GMP
  
- “Stay On” Imperative
  - Blackout is not an option
  
- Real-Time Execution
  - Six Sigma, JIT, Lean Manufacturing

## Industry in Focus

- Pharmaceuticals
  - Medical Devices, Food&Beverage, Pulp&Paper
  
- Utilities
  - Power Generation T&D, Water&Waste Water, O&G
  
- Automotive
  - Aerospace & Defense, Semiconductors

# Pharmaceuticals

## Enabling FDA Compliance

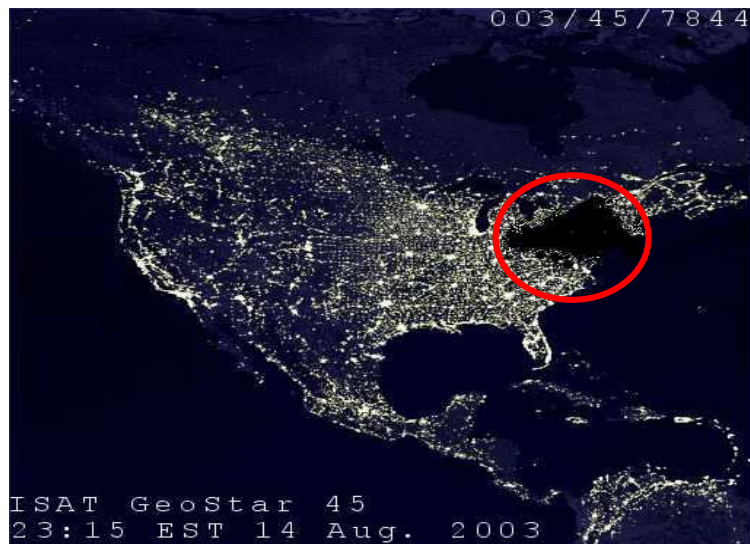


- When end-product means literally life and death the process and product quality needs to be 100%, **100% of time**
- Pharmaceutical Industry **must comply** with stringent FDA regulations
- A loss of single data-point puts an entire production at risk (a loss of millions of \$)
- **24x7 uptime is imperative** to enable manufacturing process
  - Data integrity
  - Auditability
  - Traceability

### Global Stratus Select Customers:

- Pfizer, GlaxoSmithKline, Merck, Johnson & Johnson, Bristol-Myers Squibb, Wyeth, Purdue Pharma, Aventis, Novartis

# 2003 US blackout caused by cluster failure . . .



*14:14 EDT Computer SCADA alarm **failed** ...*

*14:41 EDT Primary Server **failed** ...*

*... application automatically transferred to backup server*

*14:54 EDT Secondary Server **failed** ...*

Leaving 50 million people in the dark

... and throwing the world's largest economy into havoc



# Utilities

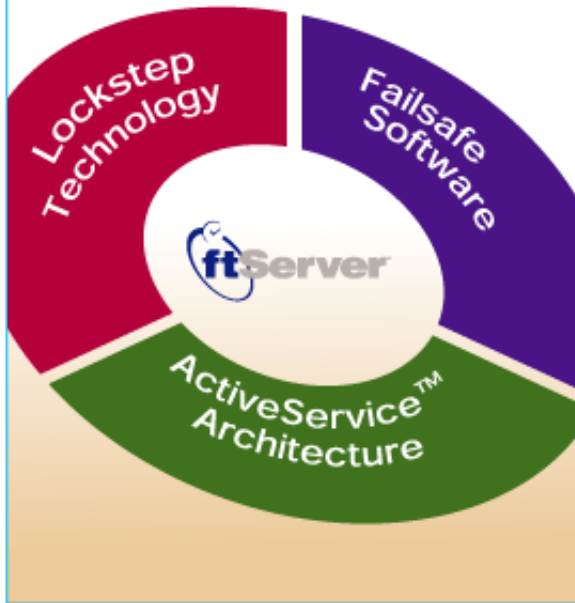


- Electricity, Water, Gas **must be ON** at all times
- Utility Industry requires “simple to operate” High Availability platform
- Global Select Customers:
  - Cleco Power, Cinergy, LA Dept. of W&P, PJM LLC, Jiaying Power, Korea Electric Power, PAE, Union Fenosa, United Utilities, Portsmouth Water Authority

# 99.999% High Availability for Hardware



The Best Way  
to Protect Uptime  
is  
Every Way Possible



# Hardware



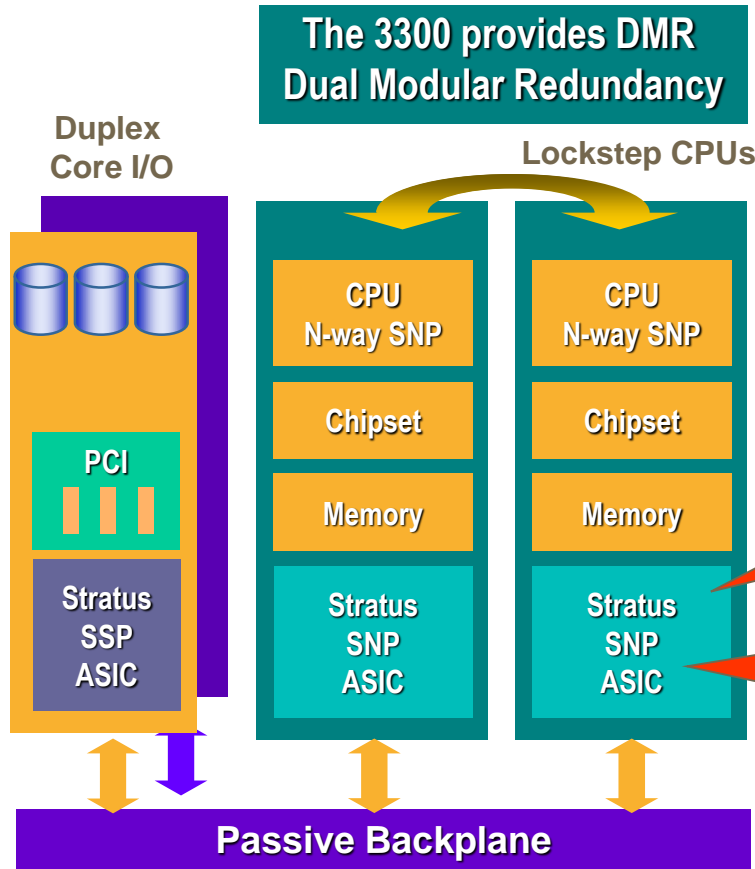
# Lockstep Technology



## Hardware Fault Tolerance



Second Generation ftServer® Family



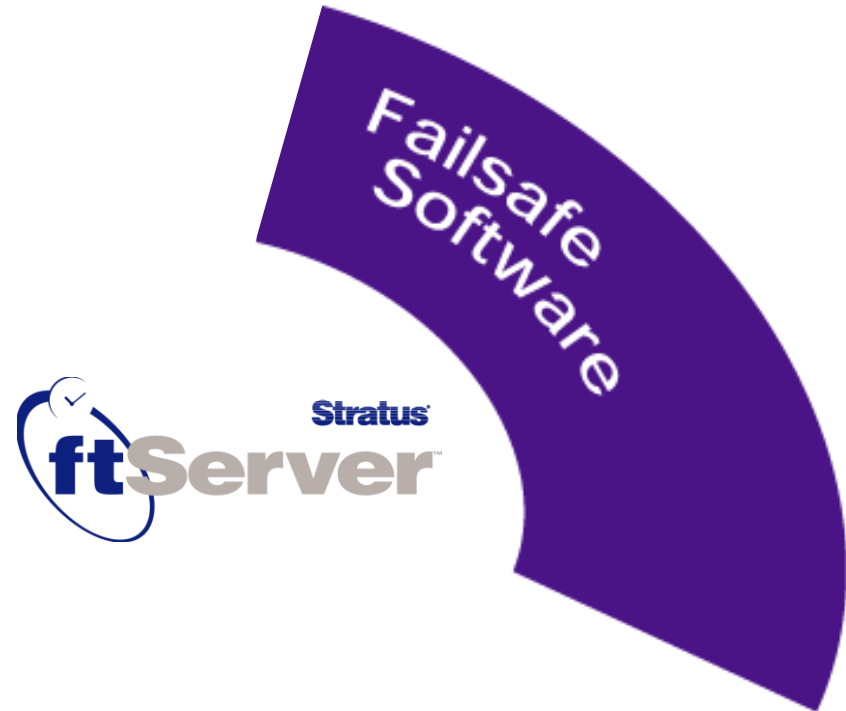
Active spare components prevent system downtime

Deterministic fault detection

ZERO Failover Time

No Data loss!

# 99.999% High Availability for Windows Operating System



# Failsafe Software



## Software Reliability

- ✓ Software shielded from transient hardware errors
- ✓ Hardened drivers prevent software failures
- ✓ Software issues are reliably captured, analysed and corrected
- ✓ In-memory data and disk protected
- ✓ Extensive integration and error insertion testing

### Failure Prevention



**Prevents, diagnoses, and resolves software issues**

# 99.999% High Availability for Entire System



# ActiveService™ Architecture



## Technology-Enabled Services

- ✓ Automatic fault detection and isolation
- ✓ Integrated call-home and online remote support
- ✓ Online component replacement by user
- ✓ Out-of-band management
  - ✓ ftServer® Access Adapter



Detect and report problems before they cause downtime



# 24 x 7 Worldwide System Support



## Mobilized for High Availability

- ✓ Global 24 x 7 phone support
- ✓ Accurate fault isolation, part dispatch
- ✓ Stratus drives resolution of OS issues
- ✓ Microsoft Gold Certified Partnership
- ✓ 100% Availability Program



# 99.999 Complete Solution Availability Program



Stratus has superior **platform** availability

Drive to superior **solution** availability

**99.999** Solution Availability Program

**Creating new level of availability!**



[www.stratus.com](http://www.stratus.com)