

## Avian Flu and the Opportunity to Get Ready

STAYING IN BUSINESS WHEN THE OFFICE IS FINE — BUT 40% OF YOUR PEOPLE  
MIGHT NOT BE THERE FOR SIX WEEKS

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## Introduction

In the past, influenza pandemics announced themselves with a sudden explosion of cases that took the world by surprise, bringing with them high rates of illness, large numbers of deaths, and social and economic disruption.

Today, it is different.

Although organizations large and small are facing the threat of an avian flu pandemic, potentially of unprecedented magnitude for economic loss, this pandemic is accompanied by an unprecedented opportunity for surviving as an organization: the time to prepare.

*“The H5N1 virus has given us not only a clear warning, but time to enhance preparedness. ... Nonetheless, our highly mobile and interconnected world remains extremely vulnerable. No one can say whether the present situation will turn out to be another narrow escape or the prelude to the first pandemic of the 21st century. Should the latter event occur, we must not be caught unprepared.”*

— **Dr. Lee Jong-wook, Director General, World Health Organization,  
“Avian influenza: assessing the pandemic threat”**

## The Threat for the World

### A PANDEMIC IN WAITING?

In 2004, the world moved closer to an influenza pandemic than it had been at any time since 1968, according to the World Health Organization (WHO).

- Large parts of Asia experienced unprecedented outbreaks of highly pathogenic avian influenza in poultry, caused by the H5N1 virus.
- The virus crossed the species barrier to infect humans, with a high rate of mortality.

Never before had so many countries been so widely affected by avian influenza in poultry in its most deadly form. Never before had any avian influenza virus caused such extremely high fatality rates in humans, taking its heaviest toll on children and young adults in the prime of life.

Of all viruses in the vast avian influenza pool, H5N1 is of particular concern for human health for two reasons. First, H5N1, although strictly an avian pathogen, has a documented ability to pass directly from birds to humans. Second, once in humans, H5N1 causes severe disease with very high mortality rates. These two features combine to make H5N1 of concern for a third and greater reason: its potential to ignite an especially severe pandemic.

By 2006, the evolving situation had produced many signs that a pandemic might be imminent. At mid-year,

- **Cases** — 225 human cases of avian influenza A (H5N1) had been reported to and laboratory-confirmed by the WHO. More than half of the cases had resulted in death.
- **Countries** — The cases had spanned 10 countries in several regions: Azerbaijan, Cambodia, China, Djibouti, Egypt, Indonesia, Iraq, Thailand, Turkey, Viet Nam.

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## The Implications for the Organization

### **LOSSES MEASURED IN BILLIONS OF DOLLARS AND MILLIONS OF DEATHS**

A pandemic of avian influenza A among humans could cost the global economy US\$800 billion a year, according Milan Brahmbhatt, a senior economist with the World Bank's East Asia and Pacific region.

Despite great uncertainties about the timing, virulence, and general scope of a future human flu pandemic, based on the experience of SARS in East Asia, an avian flu pandemic among humans could cause a 2% loss of global gross domestic product (GDP).

"To get a very broad idea of the kinds of economic costs that might arise, one can note that the disruptions associated with SARS led to an immediate economic loss of perhaps 2% of East Asian regional GDP in the second quarter of 2003," Brahmbhatt said at an international conference in Geneva. "Note that a 2% loss of global GDP during a global influenza pandemic would represent around \$800 billion over a whole year. And it is fair to assume the immediate shock during a flu epidemic could be even larger and last longer than SARS."

### **ECONOMIC CONSEQUENCES BEYOND THE IMMEDIATE COSTS OF DISRUPTION**

Aside from the immediate costs of disruption, a serious global flu pandemic could also entail a sizeable loss of potential world output through a reduction in the size and productivity of the world labor force due to illness and death, separately from the costs of hospitalization and medical treatment.

Based on disease patterns of post-World War Two pandemics, a 1999 study in the United States calculated that a new flu pandemic could lead to between 100,000 and 2 million deaths in the U.S., more than 700,000 hospitalizations, up to 40 million outpatient visits, and 50 million additional illnesses. This implies:

- **Losses for the U.S.:** The current value of the economic losses associated with this level of death and sickness was estimated at between \$100 billion and \$200 billion in 2004 dollars
- **Losses for high-income countries:** Extrapolating for all high-income countries, there could be a current-value loss of \$550 billion
- **Losses for the world:** Extrapolating for the world overall, the losses would be significantly larger because of the impact in the developing world, where the health systems are weaker and mortality could be much higher

## The Challenge for the Business

### WHEN CORPORATE BUILDINGS BECOME GHOST TOWNS

Pandemics require a different planning effort because they are different from most natural disasters, in which the heaviest damage falls on buildings and infrastructure, and typically is confined to a single region.

An avian flu pandemic would not damage offices or highways, but it would pull people away from their jobs. Consider this:

- More than 40% of the workforce could be off the job, according to the WHO.
- Organizations are advised to plan for six weeks of disruption, but the pandemic could linger for up to 18 months — coming to a city, leaving, returning.

Even in areas with no infection, workers stay at home out of fear or because they must look after children whose schools are closed or family members who are ill. This is what happened during the SARS outbreak in East Asia, according to the World Bank. People tried to minimize face-to-face interaction, impacting business costs due to workplace absenteeism, disruption of production processes, and shifts to more costly procedures.

As a result, the shock waves from large numbers of adults and children staying at home for a long time, instead of going to work or school, could be severe enough to trigger a recession. In the U.S., for example, 85% of the systems that are vital to society, such as food production, medicine, and financial services, are privately run. (The Associated Press, May 2, 2006)

### THE FUNDAMENTAL CHALLENGE OF THE PANDEMIC

Most organizations and even government agencies have contingency plans designed for a maximum downtime of only two or three days, shaped for potentially catastrophic events but not for the particular requirements of a pandemic. The focus of this planning has been on workplace assets and systems, such as redundancy of datacenters and redundancy within datacenters, instead of on workplace structure and operations. This approach discounts the fundamental challenge of the pandemic: every organization must be prepared to enable large numbers of its people to work offsite — and for a long time.

### WITHOUT PEOPLE, WHAT HAPPENS TO THE ORGANIZATION?

Some companies can operate with nearly half of their employees gone, and most could operate for a short time by doing the 20% most-critical activities, according to management consulting firm Accenture. (*USA Today*, May 1, 2006) But this can't be pulled off without planning because few — if any — organizations will have the luxury of disrupting operations even for a day:

- Statistics show that most small and medium-sized companies that remain closed for more than five days after a disaster will face an uphill battle to stay afloat. One source indicates that more than 70% of companies that suffer a major information technology interruption are out of business within one year. (*Disaster Recovery Journal*, Winter 1997)
- 40% of companies that go more than 24 hours without access to their data go out of business. (Contingency Planning and Management Survey, Eagle Rock Alliance Ltd.)

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- 93% of businesses that suffer more than 10 days of system downtime will file for bankruptcy within a year. (National Archives and Records Administration, Washington, D.C.)
  - On average, by the sixth day of a computer outage, companies experience a 25% loss in daily revenue. By day 25 it is 40%. Within two weeks of the loss of computer support, 75% of organizations reach critical or total loss of functioning. 43% of companies that experience a data-loss disaster, but have no recovery plan in place, never re-open. (“Functional Impacts of Computer Outages on Business”, research study by the University of Texas at Arlington, according to the *Toronto Star*, May 2001)
  - After the 1993 World Trade Center bombing in New York City, more than 150 companies operating in the building went out of business, but not for the reasons you might have expected. These companies failed simply because they could not get their computer systems up and running after the disaster. (Disaster Recovery Journal, Winter 1997)

#### **IT’S TIME TO MAKE A PLAN**

To meet this challenge, GartnerGroup recommends that organizations prepare for an avian flu pandemic this year and have in place IT response plans that, at a minimum, will:

- Enable large numbers of knowledge workers to perform their duties from home for an extended period of time
- Provide the means for workers to collaborate remotely
- Ensure that consistent communication with partners, customers and other stakeholders can be maintained

## The Solution for IT

#### **HELPING OVERCOME EVENTS THAT THE ORGANIZATION CAN’T CONTROL**

Citrix helps the IT group to deliver the power to keep doing business and keep everyone working, no matter what, by immediately connecting dispersed employees to the applications, collaboration tools, and communications capabilities that they need to do their jobs, regardless of where they are. Offsite workers can serve customers and access the company information and people that they need, from anywhere, securely, all in a virtual workplace that preserves employees’ sense of corporate community and their ability to conduct business as usual.

From conceptual design to customer implementation, Citrix products allow IT teams to provide well-managed, secure access for employees, partners, and customers, improving the ease, speed, and security of access for:

- Any number of individuals working independently anywhere
- Collaborative teams that come together from one or many geographical locations and organizations with the need to share information without risk to intellectual property or to productivity
- Learning opportunities for employees and customers to improve productivity, morale, and customer service, and to control costs
- Meetings on any scale at any time
- Technical support for all

**HERE'S WHAT CITRIX DELIVERS:****QUICKLY RE-ROUTE EMPLOYEES TO BACKUP SYSTEMS**

Citrix Presentation Server™ provides secure, Web-based access to essential business resources to allow users to work from anywhere using any device, over any network connection. Presentation Server assures access to corporate resources by automatically and seamlessly connecting users to the best and/or nearest server group that is available. With Presentation Server, an administrator has the ability to configure zone preference through the use of a policy rule. This policy rule allows the administrator to direct user connections to particular zones in the server farm and to configure failover in the event that a zone is not available. If this policy is configured, the user connection is directed to the server with the highest zone preference and the smallest load.

**MAKE ANY PC ANYWHERE AN OPERATIONAL WORKSTATION**

Citrix differentiates applications, their format, and their users, and does not require that these factors be in the same geographical location. This special feature greatly facilitates staff relocation, as any PC can immediately become an operational workstation because a simple Internet browser, or the installation of the Citrix client software, is all that is required, essentially creating a common universal client device.

**DELIVER DESKTOP ACCESS THAT'S "LIKE BEING THERE"**

Citrix® GoToMyPC® is a managed service with fast performance that delivers a "like being there" access experience. GoToMyPC enables remote individuals to access from any Internet-connected computer all of the applications, email, files, and network resources hosted on their desktop, just as though they were sitting in front of their PC. The Web-based screen-sharing technology works with existing firewall and Internet infrastructures, without having to change or open ports, configure IP addresses, or deploy any extra hardware or software.

**REDEPLOY WORKSTATIONS AND CAPTURE EMPLOYEES' USUAL WORK ENVIRONMENT**

By remotely connecting via a browser or a Citrix client, users regain exactly the same work environment — including their files, their business applications, their Office suite, and their interfaces — wherever they are: at home or in temporary business premises. All of this is made possible by a simple Web browser or by a unique software client that does not take more than a few megabytes of disk space — and that is available as a free download from the Citrix Web site.

**PRESERVE USERS' STORED CREDENTIALS AND THEIR EASY, SECURE ACCESS TO APPLICATIONS**

Citrix Password Manager™ deployments can be designed and implemented to take advantage of redundant, or disaster recovery, sites, providing continued single sign-on access to applications and preserving users' stored credentials in a secure fashion. Password Manager stores its administrative settings and each user's credentials in Active Directory. If there is an Active Directory domain controller or restored backup in a disaster recovery site, then — via replication — all of the users' settings and credentials would be preserved. With Password Manager as part of an organization's overall disaster-recovery strategy, users do not lose their credentials when there is a disaster and will continue to have a single sign-on experience when they access applications on a Presentation Server in the disaster-recovery site. As well, if the users have Password Manager installed locally and are unable to connect to a datacenter, they will still be able to achieve single sign-on access to their accessible applications because Password Manager has the ability to work in offline mode.

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#### **RE-ESTABLISH THE CORPORATE COMMUNITY, ONLINE**

Fostering employees' sense of corporate community is challenging when everyone is scattered, working at home, perhaps, or in temporary facilities. As well, returning to business as usual means meetings as usual, training as usual, collaboration as usual. Citrix® GoToMeeting™, as a managed service, enables organizations to bring everyone together, to instantly and easily meet online, regardless of their geographic dispersion.

#### **CUSTOMER WIN RATES, LEAD GENERATION, TRAINING WITHOUT TRAVEL**

With Citrix, the IT group can help the business increase productivity by optimizing customer presentations and meetings — regardless of location — reduce customer acquisition expenses and cost of sales by reducing travel and operational costs, boost sales by expanding geographic reach and accelerating the sales cycle, and keep customers happy with online training. Citrix GoToMeeting is a Web-based, managed service for conducting online meetings, training sessions, and collaborative gatherings that is easy to use, secure, cost-effective, and fast. This makes it easy for the Sales group to increase win rates and reduce the sales cycle, qualifying prospects without travel and strengthening relationships; for the Marketing team to generate more sales leads, more cost-effectively, and to deliver more impactful presentations; and for those teams that train individuals or large groups to minimize travel time and costs and to record and make training events available at any time, to anyone.

#### **REMOTE TECHNICAL SUPPORT THAT REMAINS WORLD CLASS**

Any time that employees are not working on site, technical assistance from the support staff of external contact centers or internal help desks is particularly critical to their productivity. When there are disasters and other business disruptions, this becomes even more important. During these events, Citrix® GoToAssist™ enables organizations to continue providing best-in-class support over the Internet; as a managed service, it maintains the infrastructure that supports the service.

#### **CENTRALIZE BUSINESS APPLICATIONS, DATA, AND BACK-UPS FOR SECURITY AND SIMPLICITY**

The difficulty in backing up business data is not so much of a technical nature, but rather of an organizational nature. Companies must identify all of the information that needs to be backed up, no matter where it is located, and the information very often is scattered across hundreds of servers and thousands of clients. Plus, the backup plan must be constantly updated in order to include new applications. By centralizing business applications on a limited number of servers and by removing the need for information-rich clients, Citrix allows organization to avoid storing sensitive data on client devices.

- **Storing data centrally** — With Citrix, data from client applications and users' personal folders are stored centrally — not on each desktop — and published by file servers at the heart of the information system where RAID-based storage technology can be deployed and backup solutions implemented.
- **Anti-theft protection** — Centralization also allows intellectual property to be more tightly protected. The loss or theft of client devices no longer involves the risk of data being stolen. Devices do not, in fact, contain any data, but simply the standard Citrix client or even a simple standard browser to connect to the access center via the Citrix Access Gateway™.
- **Tightened control for sensitive documents** — Finally, to ensure that users do not keep copies of the documents on which they work, the Citrix solution can forbid remote users from saving them locally or from printing them.

**LEVERAGE IP TELEPHONY FOR FAST ACTION**

Because it is easier and faster to get an IP network up and running than it is the regular telephone system, due to the ability to put in a portable IP telephony system just about anywhere, organizations can leverage their IP telephony systems in several ways. For example, temporary call centers could be up and running faster, and use the Citrix Application Gateway™ to deliver high-performance, converged voice and data applications to the screens and speakers of the IP telephones, securely and simply. As well, the Citrix® Voice Office suite of packaged, converged IP telephony applications for organizations with Cisco and Nortel IP telephones can be used for both emergency and non-emergency functions. Delivered by the Application Gateway, Citrix® Zone Paging can replace an overhead paging system that has been rendered useless because the facility is inaccessible. Using Zone Paging, the IP phones essentially replace overhead speakers for delivering audio messages. Citrix® Broadcast Server can transform IP phones into information kiosks, delivering priority messages such as emergency, IT, and weather alerts to the screens of the IP phones.

**KEEP SERVICING ONLINE CLIENT REQUESTS BY THE MILLIONS**

On any given day, organizations throughout the world are servicing the client requests of many, many millions of Internet users. Some of these organizations themselves operate on a vast scale, with multi-site application environments. The Global Server Load Balancing (GSLB) feature option for the Citrix® NetScaler® Application Switch maintains application availability when there is a data center outage, transparently redirecting user traffic to the closest surviving data centers, based on either geographic or network proximity. In addition, GSLB dynamically detects changes in global network performance and site reachability, further protecting against application outage scenarios.

**THE SECURITY OF ONE ACCESS POINT**

Citrix provides a secure, always-on, single point of access to any information resource via a universal SSL VPN appliance that works through any firewall; supports all applications and protocols, including IP telephony; is fast, simple and cost-effective to deploy and maintain via its Web-deployed, auto-updating client; and ensures that devices meet security standards with a worm-blocking client and integrated end-point scanning.

**A BROWSER THAT KEEPS THE DOOR TO THE SYSTEM CLOSED**

With Citrix, all clients access the same browser and use it exactly as if it were working only for them, on their PC. But in reality, the browser remains protected, out of their reach and controlled by IT. Users cannot modify the configuration themselves and IT has great flexibility in configuring browsers: the IT staff changes the parameters only once and all modifications become effective on all clients. Plus, the business firewalls can be configured to authorize only outgoing Web traffic that comes from the Citrix server so any other browser that is installed on a PC will be unable to access the Internet.

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## The Key for Everyone

### **ON-DEMAND ACCESS RIGHT AWAY, EVERY DAY, SECURELY**

As the global leader and most trusted name in on-demand access, Citrix since 1989 has been helping organizations to tie together information resources, access devices, and networks — securely and cost-effectively — and to leverage the power of access for the success of their business initiatives. In fact, Citrix was the first company to understand how organizations use access to run their business, and to deliver an access platform with access solutions based on the customer's perspective. Citrix solutions help IT to both improve operating efficiencies and directly support their organization's business goals.

Today, more than 180,000 organizations around the world use the Citrix Access Platform, including 100% of the *Fortune* 100 companies and 98% of the *Fortune* Global 500, as well as hundreds of thousands of small businesses and individuals. Many of these customers are using Citrix to overcome events that the organization can't control. We invite you to read the case studies on <http://www.citrix.com/caseStudies> and also "Real Metrics of Business Impact", which highlights 45 examples of real metrics achieved with Citrix products.

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Best Access Experience. Anytime. Anywhere.

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